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ABSTRACT

Individualized health incentive program modules were developed for students having severe physical disabilities. Their needs fell into these categories: lack of function of the involuntary nervous system; paralysis or lack of feeling; bracing or confinement to a wheelchair; muscular weakness; arm and joint immobility; prosthetic limbs; brittle bones; diminutive size; cardiac problems; and bleeding problems. The project resulted in: (1) improvements in test scores on standardized tests of knowledge and behavior; (2) improvements in student attitudes as demonstrated by pre- and post-project questionnaires given to students, parents, and teachers; (3) development of five printed strands of health modules, each individualized according to nine disability categories; (4) consolidation of background information on each disability as it relates to each strand of health education. This background information is printed in the modules. Aimed at teachers of disabled students, it represents the combined three-year input and experience of faculty, parents, and students. The project concludes that physically disabled students need and benefit from a more extensive health education curriculum, which includes both regular and specialized health concepts, information, and activities. (Author/JD)

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FINAL REPORT

Project No. H233556

Grant No. OEG-0-73-7065

INDIVIDUALIZED HEALTH INCENTIVE PROGRAM MODULES FOR PHYSICALLY DISABLED STUDENTS IN GRADES KINDERGARTEN THROUGH TWELVE

Kathryn D. Reggio, Ph. D.

Human Resources School
Albertson, New York 11507

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
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SP 010 852

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BACKGROUND

Needs of A Neglected Student Population

Until recent years, the physically handicapped have constituted a neglected group. It was assumed that they were incapable of engaging in many of the educational activities provided for their more fortunate peers. Each year thousands of intellectually normal, physically handicapped students are still excluded from attending a secondary school because of their disabilities. Others are permitted to attend school but are excused from certain courses. In the process, Health Education, an area very important to their present and future well-being, is often omitted from their academic program. The number of students affected to a greater or lesser degree can be surmised from the fact that, according to a recent survey conducted by the U. S. Office of Education in the Department of Health, Education, and Welfare, there are almost three hundred fifty thousand "crippled" children of school age in the United States.

Education for health, or health education, is being supplied in abundance for healthy, able children since the development of such excellent curriculum designs as the National School Health Education Study and the outstanding Prototype Health-Curriculum Materials issued by New York State.

However, children born with birth defects, or struck by crippling accidents, or contracting debilitating hereditary diseases, need specific education for coping with health problems. Existing health education programs, especially the two examples cited, can be used, with adaptations, to teach physically disabled children basic general health concepts, attitudes and behaviors. However, there is a serious need for specific concepts, behavioral objectives, methods and materials for the health education of the intellectually normal, physically handicapped child.

While improved attitudes and behaviors are the admittedly difficult goals of current health instruction for normal students, improved attitudes and behaviors for the disabled students are more difficult to motivate.

Therefore, learning processes must be built around incentives for making themselves as healthy and self-sufficient as possible. And these incentives must be built into the curriculum.

PURPOSES

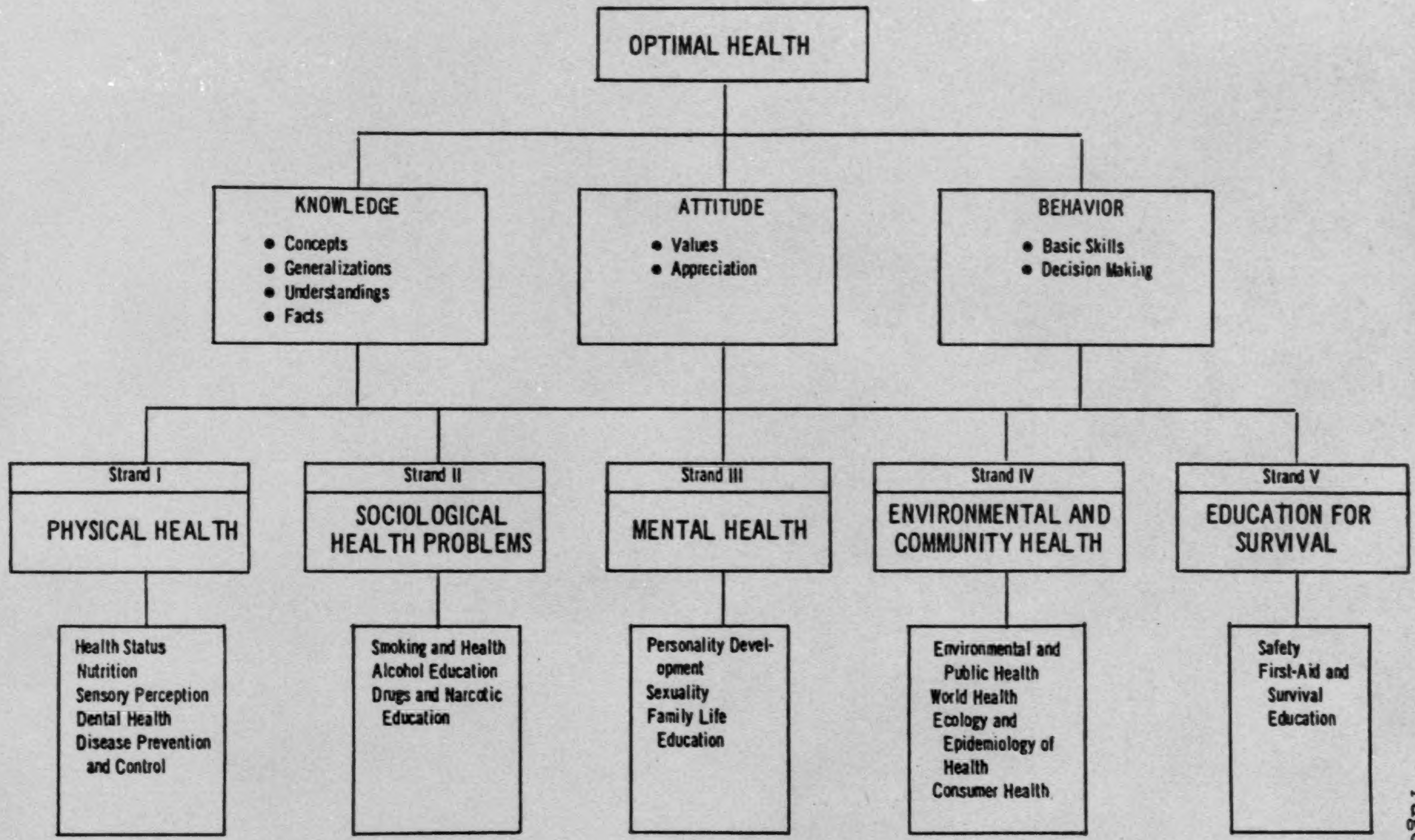
Purpose of the Project

The purposes of this project are to adapt the New York State Health Education Curriculum to the special needs of physically disabled students in grades Kindergarten through twelve, and to organize educational information about physical disability.

A relevant individualized program should help at least 350,000 disabled students both in schools and on homebound instruction to learn to maintain optimal health. It should also give disabled students incentive for developing improved attitudes toward health maintenance. In addition, a body of knowledge and individualized sets of programs in health would be made available to all teachers of the physically disabled.

A copy of the topics of the five strands of the New York State Health Education Curriculum is included here. The complete curriculum guides are available on microfiche through ERIC at minimal cost.

Diagram of Health Education Strands


OPTIMAL HEALTH
KNOWLEDGE
• Concepts
• Generalizations
• Understandings
• Facts
ATTITUDE
• Values
• Appreciation
BEHAVIOR
• Basic Skills
• Decision Making
Strand I
PHYSICAL HEALTH
Strand II
SOCIOLOGICAL HEALTH PROBLEMS
Strand III
MENTAL HEALTH
Strand IV
ENVIRONMENTAL AND COMMUNITY HEALTH
Strand V
EDUCATION FOR SURVIVAL
Health Status
Nutrition
Sensory Perception
Dental Health
Disease Prevention and Control
Smoking and Health
Alcohol Education
Drugs and Narcotic Education
Personality Development
Sexuality
Family Life Education
Environmental and Public Health
World Health
Ecology and Epidemiology of Health
Consumer Health
Safety
First-Aid and Survival Education

RELATED RESEARCH

Related Literature and Research

A health education program which should improve a disabled child's self-concept, independence, and health habits would be relevant to needs pointed out in the professional literature. Mackie says:

> "The disability may be reduced to relative unimportance or magnified far beyond actuality by the afflicted individual's total reaction to it which must be measured and considered in helping him with educational, vocational, or other planning."

In an earlier article for Exceptional Children (1953), she had noted the need of an enriched curriculum to compensate for the lack of common, everyday experiences because of long periods spent in hospitals or institutions. She suggests demonstrations - field trips, audiovisual aids and a flexible and individualized curriculum.

Barker's (1953), Wright's (1960), Garrett's (1962), and McDaniel's (1969) books on the psychology of the physically disabled illustrate the trend toward understanding and expecting physically disabled people to achieve more independence and to reach their fullest potential.

One area which lends itself most readily to helping the disabled achieve more independence and thereby reach a fuller potential is that of Health Education. At present the field of Health Education is an increasingly important area of study in all schools. Current Health Education no longer settles for accumulation of facts -- it aims to increase understanding of health information in order to make valid health decisions, resulting, it is hoped in improved attitudes and behaviors.

Sliepcevich (1964), Schneider (1965), Foster (1968), and Mayshark (1968) have noted and discussed both the difficulty and necessity of improving attitudes and health behavior as well as knowledge. They have stressed the recommendations of the Nationwide Study of Health Instruction for closer cooperation between parents, medical personnel, public health workers, voluntary agencies and school personnel for better articulation between school health services and health programs.

Cognizance was taken of the experiences and advantageous aspects of other curriculum studies which use a learner-oriented, interdisciplinary approach to problem-solving.

Pertinent to the development of the nine specially oriented approaches to the study of health were the experiences of the Biological Sciences Curriculum Study which formulated three different structural patterns, each one approaching the study of biology from a distinctive point of view - although approximately seventy percent of the content is common to all three versions.

The conceptual approach of the National Health Education Study (1967) was considered. Under the health concept approach of the American Association of Health, Physical Education and Recreation's Health Concepts (1967), the student arrives at his own health concepts through an active thinking process. Thus, the concepts become internalized and therefore more meaningful.

The TABA Curriculum Development Project in Social Studies (1969) emphasized important concepts and generalizations from all of the social sciences and served as an impetus to an interdisciplinary approach to health problem-solving.

A Guide for the Curriculum in Health Instruction (1968) published by the Roslyn Public Schools has a comparative flow chart of Social Studies, Science and Health Curricula, which served as a resource to a student seeking an interdisciplinary approach.

Another model having aspects worthy of emulation is the Denver Health Instruction Study which uses interviews and checklists with pupils, parents, and teachers to ascertain the health interests, health needs and developmental characteristics of children at various age levels. The curriculum is organized around 18 areas of health facts and expressed as activities or learning experiences that might be used to develop desirable understandings, habits, and attitudes in pupils. This project is being used with some modifications in the areas of Health Education, home economics, and social studies.

The school Mathematics Study Group and the University of Illinois Mathematics Project (1969) emphasized the importance of discovery as an aid to teaching when the student discovers generalizations himself.

Bruner (1960), in comments on the Woods Hole Curriculum Study, has noted the advantages of the learner-oriented situation, and of relating knowledge from various fields to solve a problem through an interdisciplinary approach.

METHODS

Under each topic of the five strands of the New York State Health Education Curriculum, individualized health incentive program modules have been developed for students having the physical disabilities included at Human Resources School.

Nine modular sets are arranged for purposes of similar needs according to the following plan:

1.	Lack of function of involuntary nervous system	Dysautonomia
2.	Paralysis or lack of feeling, bracing or confinement to wheelchair	Spina Bifida, Post-poliomyelitis, Quadraparesis, Paraplegia, Hemiplegia, Spastic Paraplegia, Dystonia, Legg-Calve-Perthes Disease
3.	Muscle weakness	Muscular Dystrophy, Amyotonia Congenita, Kugelberg-Welander Disease, Charcot-Marie-Tooth Disease.
4.	Arm and joint immobility	Arthrogryposis, Rheumatoid Arthritis

5.	Prosthetic limbs	Congenital Amputee, Limb Deformities
6.	Brittle bones	Osteogenesis Imperfecta
7.	Diminutive size	Achondroplasia
8.	Cardiac problems	Congenital Cardiac Conditions, Rheumatic Heart Disease
9.	Bleeding problems	Hemophilia, Thalassemia, Sickle Cell Disease

These modules build in the incentive by incorporating student-oriented learning activities and student self-evaluations stated in terms of behavioral objectives. Motivational procedures, such as role-playing, dramatizations, games, demonstrations, multi-media projects, and field trips are included. In addition, contact with other learning areas is achieved by integrating language arts, science, home economics, creative arts, and by encouraging organizational representatives and professional consultants to bring the community to the students.

Pre-planning

A steering committee consisting of administrators, consultants, parents, and project staff members met weekly for several months to determine format, set priorities, plan intervisitations with other schools, study other relevant curricula and establish liaisons with community agencies.

Liaisons were formed with such community health- related agencies as North Shore Hospital, Adelphi Graduate School of Nursing, C. W. Post Department of Health Education, and associations representing the disability groups, such as the Spina Bifida Association, the Dysautonomia Association, the Muscular Dystrophy Association, Easter Seals, and the Arthrogryposis Association.

Implementation

The project proceeded in the following steps:

1. Establishing needs by standarized tests, interviews, inventories, questionnaires and rating scales given to the students, their parents, and physicians.
2. Developing individualized health modules through the cooperative work of the students, parents, teachers, and consultants by:
    a. choosing the sections of the present New York State Health Curriculum which are relevant to the physically disabled students.
    b. adapting some sections which required only slight modification to be relevant.
    c. adding new sections which relate the substrand topics to the nine disability categories.
3. Evaluating each module as it was developed.
4. Evaluating attitudes and health habits on a continuing basis by interviews, inventories, questionnaires and rating scales.

Procedures for Development of Modules

1. The teacher, student, and parents in conference set up subject matter goals and attitudinal and behavioral objectives for each module on the basis of the procedures mentioned for establishing needs. These were very individualized and particular at first.
2. Students and teachers gathered information from authorities in the fields of medicine, mental health, social services, rehabilitation and education to meet the subject matter goals contained in each module.

3. Students and teachers developed optional activities, depending on ability and interest, for participation in learning through community programs, peer group activities, and family cooperation activities. After evaluation, these were incorporated into each module.

4. Committees of students and faculty reviewed materials relevant to each module.

5. Student self-evaluation activities were formulated and carried out on each module after the learning activities were completed.

6. Students, faculty, and consultants evaluated and revised all the modules, based on success and relevance.

Procedures for Evaluation

1. Ongoing evaluation was done on each module during the year. Each module was evaluated by the students, teachers, and project team, as it was developed, by a checklist based on the following items:

    a. relevance in fulfilling assessed needs

    b. helpfulness in improving student's health knowledge

    c. productiveness in establishing more positive attitudes.

    d. motivation in developing good health habits.

    These items were rated on the 5-point evaluation scale recommended by the National Study of Secondary School Evaluation in the Evaluation Criteria for Health Education.

2. Reassessment and comparisons with initial findings were made according to the following procedures after the modules had been developed and used by the students:

    a. Post-testing of knowledge, attitudes and health habits or behavior using comparable forms of the pre-tests.

    b. Resurvey of all who had made specific suggestions regarding students' needs, for evaluation of the success in meeting those needs.

    c. Review of medical records to determine whether previously noted health needs and completeness of health care are being met to a greater degree.

d. Anecdotal reports and checklist ratings from students, parents, and all cooperating personnel concerning the present state of students' health maintenance and adjustment.

e. Student and teacher evaluation and revision of the content, concepts and learn activities included in the curriculum modules by means of the checklist items and 5-point evaluating scale already mentioned.

FACILITIES AND PERSONNEL INVOLVED IN THE PROJECT

Human Resources Center

Human Resources Center is a threefold complex which has evolved in response to the needs of handicapped young people and adults.

Abilities, Inc.

The first unit to be established was Abilities, Inc. From modest beginnings it has developed into a diversified industrial workshop providing employment for handicapped adults in areas such as electronic assembly, packaging, banking, and data processing. It has demonstrated for all to see that handicapped people can be given employment, can live up to acceptable standards of productivity, and can achieve in the process a new measure of self-esteem and personal dignity.

Research and Training Institute

A need for research into problems of handicapped people, who are drawn out of seclusion into the busy world of work with its strains and stresses and interactions with the non-handicapped, prompted the development of the Research and Training Institute. Over the years, this component of the Center has carried on practical research in many work-related areas and published the results in magazine articles and printed monographs. These have been widely disseminated and have received very favorable reception from other individuals and groups studying the handicapped.

Human Resources School

The third unit to be developed as part of the Center is the Human Resources School. In nine years, this school has grown from a one-room elementary classroom to a complete educational program from nursery and kindergarten through senior high school. Its student body is composed entirely of physically disabled children of normal mental capacity whose disabilities had made them homebound until they were able to register at this specially-designed facility. Approximately thirty different disabilities are represented in the school at any one time. These disabilities may be classified as neurologic, myopathic, muscular-skeletal, skeletal, cardio-vascular, dermatologic, and metabolic. The disabilities represented in largest numbers are: muscular dystrophy, spina bifida, osteogenesis imperfecta, arthrogryposis, dysautonomia, and cardiac conditions.

The students come from Nassau, Suffolk, Queens, and

Westchester counties. They are transported to and from the school daily in "Econovan"-type vehicles from their homes in forty-five local school districts. When they arrive at the school, its specially constructed entrances, hallways, classrooms, library, science laboratory, gymnasium, swimming pool, and toilet facilities make it possible to accommodate the children so that all areas are accessible to them in spite of braces, crutches, and wheelchairs.

Elementary Curriculum

The academic program at the elementary level follows New York State syllabi in reading, language arts, arithmetic, social studies, science, art, music, health, and (adapted) physical education.

Secondary Curriculum

At the secondary level, the school offers both a college preparatory and a business program. English courses follow State syllabi and terminate in Regents examinations for the college-bound students. Public Speaking and Dramatics are offered as electives in the twelfth year. A required Science course is supplemented by electives in Practical Biology, Regents Biology, Earth Science, Chemistry, and Physics. French and Spanish are offered as three-year sequences. The Social Studies curriculum includes Our Cultural Heritage in seventh grade; United States History in eighth grade; Asian and African Culture in ninth grade;

Modern World History in tenth grade; American History, Economics, and Government in eleventh and twelfth grades. In addition to General Math and Elementary Algebra, Regents courses in Math 10, 11, and 12 are offered. The Business program is vocationally oriented and includes electives in General Business, General Math, Typewriting 1, Bookkeeping 1, Data Processing 1 and 2, Business Law, and Distributive Education 1 and 2. Courses in Driver Education, Homemaking, Photography, Music, and Art are offered as electives.

Special Features

An adapted program of physical education is facilitated by a swimming pool, outdoor recreation area, specially designed bowling alley, gymnasium, and physical therapy room.

Other adapted equipment includes adjustable table-desks, accessible cloak rooms and lockers, low shelves and blackboards, players, tape recorders, film strip, loop, and 16 mm projectors, Audex teaching machines, electric typewriters, and business machines, including a simulated 360/30 computer.

Serving on the school staff are a medical director, psychologist, physical therapist, nurse, guidance counselor, and male and female attendants. Approximately 165 volunteer teacher-aides, many of whom are ex-teachers, help in the classrooms and other areas.

Accreditation of the School

Human Resources School was chartered by the Board of Regents of the State of New York to explore the possibilities of educating severely physically handicapped boys and girls who would ordinarily be excluded from a public school and placed on home instruction. With four senior high school graduating classes to its credit and an enviable record of college acceptances and college graduates, Human Resources School has amply demonstrated its capacity to accomplish the purposes for which it was established. The results achieved are largely attributable to the competent and dedicated staff of teachers and administrators recruited by the school. All are certified by the New York State Education Department for the positions which they hold. The secondary program of the school is specially accredited by the Bureau of Secondary School Supervision after State inspection and approval.

PROCEDURES FOR THE FIVE STRANDS

Activities at Human Resources School Related to Physical Health (Strand I)

Science and health education were integrated for the development and application of the physical health strands for all students. Included in this development were the science teacher, the school nurse-teacher, the physician, and the classroom teachers. This team also met with the project director and a research associate for weekly planning and coordination sessions.

The school integrated a number of its curricular and co-curricular activities with those of the health curriculum, resulting in the following projects:

For each section of Strand I, physical health, a particular application to disabled children was tried. Some indicative examples follow:

I Individual Health Status

Disabled students require help to live as total individuals in spite of their disabilities. To do this, they need assistance in living with their problems and correctly assessing their physical abilities. Optimum fitness despite the limitations of each student was the aim.

A. Daily Health Practices

Daily health practices have special significance for maintaining the overall fitness and well-being of a disabled student. Students were motivated to accept responsibility for these practices and to find ways of caring for themselves.

Teachers developed sensitivity to the importance of these practices to students with disabilities. Their observations are incorporated into the background page of the curriculum guide where the teacher is informed of the special needs of the children with each type of disability. The significance of each of the following daily health practices for maintaining fitness is explained: bathing daily, washing hand and face frequently, eating nourishing meals, care of skin, care of feet, care of hair, care of nails, care of teeth, good posture: moving, standing, or walking.

Students worked out methods of managing their health practices by posing for photographs demonstrating the rules of good health practices. These photographs were used as an exhibit at the health-science fair.

B. Long-term Health Practices

Emphasis was placed on long-term health practices such as getting periodic general medical check-ups, maintaining resistance to infection, and participating in beneficial physical activities.

A campaign was launched to encourage students to have periodic medical check-ups, in addition to disability-related treatments. Continual reminders to parents included letters from the school nurse-teacher with follow-up discussions at small group parent meetings, distribution of pamphlets, and exhibits at the health-science fair. As a result, there was a 25% improvement in numbers of children getting regular medical check-ups and routine immunizations and in reporting the information to the school.

Planning individualized programs of personal exercises and activities to be enjoyed in adult life was undertaken. A swimming pool program was used extensively to encourage movement of even the weakest students - for perceptual experiences and for circulation, bone growth, kidney function, and muscle strength.

The most successful methods of motivating children to participate in beneficial movement and exercise was through games, competitive sports, tournaments, and self-improvement check-lists, using adapted equipment and minor rule changes.

Coordination with ETV - Weekly lessons in elementary grades coordinated with the Educational TV health-science series "All About You." The program in human anatomy, physiology emphasized the functions of the mind and body, helped children understand what a human being is and examined reasons for good health care. Students and teachers followed up by applying the lesson to the individual needs of the students.

Individual students were encouraged to develop health habits based on their special needs. For example: Meeting and discussion with the nurse and the students with Spina Bifida to emphasize the importance of cleaning and

and emptying urinary collecting devices, methods of regular emptying of the bladder by credeing, proper cleansing procedures to eliminate odor, and regulation of bowels.

C. Acceptance of Individuality of Each Person's Physical Appearance

Study of the varieties of growth patterns and physical differences through library books, filmstrips, and personal observations.

Height and weight measurements were taken for each student. For height: Using a tape measure while student is lying down. For weight: Using a scale in which students can sit. Purpose: Understanding that their fitness does not depend on conformity to standard growth charts.

Guest alumni led "rap sessions" emphasizing relative importance of developing social maturity, personality, and qualities of character as balanced against physical beauty.

Student council and recreation program leaders led workshops on the importance of personal cleanliness, good health habits, good grooming and good manners for social acceptance.

D. Dispelling of Misunderstanding about Disabilities

Some students, after preparatory research as well as consultation with the nurse, explained their disabilities to the other students. Some had expressed the feeling that classmates avoided contact with them because they thought they might catch a particular disability.

A clear explanation by the physician of the difference between communicable and non-communicable diseases was given so that students would understand that their disabilities were all non-communicable.

Explanation of the etiology of the major disabilities by the school physician dispelled many misunderstandings. The explanation included:

Hereditary diseases: Hemophilia, Muscular Dystrophy, Dysautonomia

Birth defects caused by: Trauma in utero
Disease of mother while pregnant (e.g. Rubella)
Unknown etiology - but still non-communicable

Accidental trauma:

E. Improved Attitudes Toward Disabilities

Most students did not know what disabilities their classmates had and many were afraid that the other disabilities were catching. Once a few students explained their disabilities to their classmates, many others became interested in doing research on their own disability. Increased information and knowledge for those who wanted it had a positive effect on all the students.

Since all our students could see the improved prospect for their future by observing the optimism and independence of the older students with similar disabilities, the open-communication approach had a very positive effect.

Only muscular dystrophy was a problem. In students with progressive muscular dystrophy, the deteriorative effects on the older boys was apparent. In addition, their parents worried about the effect of their knowing about the probable outcome. We found, however, that the older students, all of whom could read intelligently, surmised or knew. They also saw that two seniors with muscular dystrophy had died that year.

The students with muscular dystrophy were helped by learning about the advances in research on muscular dystrophy, and about the advances in avoidance of complications by the use of antibiotics, etc. When they understood that good care prolonged life, they felt better able to cooperate in the effort to do as much as they could for themselves and to accept all important medical recommendations for their maintenance while they hoped for a breakthrough in the discovery of a cure.

They also expressed their feelings that they found satisfaction from life because of the love given them, and because their intellectual and social needs were being fulfilled. All expressed hope for a cure.

II Nutrition

Appropriate diet was a special priority goal for all disabled children. Weight control for wheelchair-bound students is vital in order to avoid sores, to be able to be lifted by others or to be able to maneuver themselves into and out of the wheelchairs. Because of being wheelchair dependent, they have a special problem with obesity. Therefore, weight control was approached from this point of view.

In some cases, duller taste sensations, such as those which occur in children with dysautonomia, may interfere with proper nutrition. In other cases, students who cannot swallow food received training in selecting and using special foods and in adjusting to a wider variety of nutritional foods.

A. Health Breakfasts as Parent Education

Parents of the students have been encouraged to become involved in the nutritional education of their children by inviting them to a series of health breakfasts which are described in the nutrition module.

The health breakfasts, held during school hours, brought out the largest number of parents of any event ever held at Human Resources School. Comments were overwhelmingly favorable.

B. Food Intake Records Kept

Parents were involved in helping their children keep a complete record of all food and drink eaten for one week. Then they evaluated their diets in individual consultations with the school nurse-teacher and discussed what they should add or subtract according to their own needs.

C. Secondary Nutrition Project

Secondary students in coordination with the home economics classes had a program to develop independence in shopping for, cooking, serving, and eating nutritious meals without relying on "fast foods" or fattening snacks.

To prepare to live independently, they received practice and training in planning nutritious menus based on the four food groups, coping with the logistics of shopping in a supermarket, preparing and cooking a variety of foods, finding socially recommended methods of serving and eating the meal and managing the cleanup afterwards. As a culminating activity, they bought, cooked, served, and ate a class luncheon.

The senior high school students voted this as one of the most practical and enjoyable programs this term.

D. Healthful Snack Campaign

A list of healthful snacks was developed by the students and the health project committee. The list was sent home with a letter enlisting their cooperation. The teachers and the nurse continued to encourage students at snack time each day. Classes had "healthful snack" parties. After that, all special parties and luncheons in the school emphasized foods from the healthful snack list.

III Sensory Perception

A. Coping with Loss of Sensory Perception

Children with paraplegia due to spinal cord injuries or Spina Bifida may have loss of sensation below the level of their lesion. They often have bladder and bowel incontinence and muscle weakness. Since they do not feel pain, they need to be trained to examine their buttocks for skin breakdown from sitting, from rubbing on braces, or from urinary irritation.

B. Remediating Perceptually Based Learning Disabilities

A special area has been enlarged and a special teacher has been working with individual students to correct perceptually based learning disabilities using diagnosis of learning strengths to remediate learning weaknesses. Exercises were individually prepared on the basis of Meeker's Structure of Intellect using diagnosis of learning strengths to remediate learning weaknesses.

The Frostig Perceptual Program was individualized for first graders.

C. Overcoming Body Image and Spatial Relationship Problems

In addition to the many physical activities suggested in the module, center-wide cooperation in activities aimed at improving students' self-concept also resulted in improved body image and more accurate perception of spatial relationships.

D. Improving Ability to Use and Enjoy the Senses

Many classroom and outdoor activities were used in the school to attempt to compensate for the students' sensory deprivation due to physical confinement. In addition, aiming to provide opportunities in sensory experiences which physically disabled children are often deprived of, we have introduced programs in a Planetarium and 360° Multi-Sensory Experience Room. In the 360° theater, the students had the experience of being "in" places like the Bethpage Restoration Village using peripheral vision and of exploring the wetlands of Long Island (which would be physically impossible in a wheelchair).

IV Dental Health

With the physically handicapped child, neuro-motor and muscular-skeletal deficits increase the probability of dental problems such as caries and malocclusions. Therefore, these children require an intensive program in oral hygiene as well as close supervision of dental status by a dentist.

Extension of services of dentist and dental hygienist, experimentations with special types of toothbrushes and water-piks and devices for enabling children with upper extremity weakness to grip regular brushes were carried out.

In coordination with service in our dental clinic, dentists have visited each class and conducted lessons in oral hygiene, answered students' questions, consulted on individual disability-related problems of maintaining dental health.

Since a campaign to have students brush after lunch was not entirely successful in the elementary grades, a more practical campaign was mounted to have every student rinse his mouth at lunchtime. This approach succeeded.

V Disease Prevention and Control

It is important to emphasize the need for routine immunization for physically disabled children since they are more prone to complications of disease. Further, a physical therapy program is also a means of preventing disease or infection for children with respiratory infections. This is particularly important for children with muscular dystrophy, scoliosis, dysatuonomia and myopathies.

Because of their dependency, personal hygiene is often neglected in severely physically disabled children. Emphasis was, therefore, placed on health habits, self-care, and on training parents and guardians to help immobilized children.

A campaign to encourage regular general checkups, which may be neglected because of concentrations on the disability, resulted in closer home and school communication and almost total improvement in student immunizations.

On the secondary level, lessons in the causes and results of venereal disease were given special attention because of the naïveté and protected rearing of many of the students.

There is a common misunderstanding, even among other disabled people, that children with a chronic disability have a "catching" or contagious disease. The chronic disabling conditions described in this project are not contagious. Most of them are congenital, hereditary, or caused by a traumatic injury.

Therefore, it was important to assure the students that their disabilities were not "catching" so that they could explain this objectively to others who might avoid physical proximity because of a mistaken fear of contagion.

Training in defining and explaining the difference between physical disability and contagious disease was a significant activity for secondary students.

Description of Health-Science Fair Held at Human Resources School

The Health-Science Fair was held as the year's culminating event for the physical health strand. This fair did not emphasize disability, since it was a public presentation aimed at demonstrating the students' mastery of the regular curriculum.

The presentations do demonstrate, however, the range of activities possible for physically disabled students studying the regular curriculum.

One pertinent example was the exhibit of "good health habits", pictures posed for in advance by the most severely disabled students who would not be able to be very active at the fair.

Kindergarten - Healthful Snacks

1. Good snacks - for good health - popcorn, peanut butter and crackers

   Students popped the corn in an electric popper and spread the peanut butter on the crackers.

   Visitors worked out calorie content and nutritional values of each snack while enjoying a taste.

2. Picture-story books on "Learning About Health" were chosen by the students and exhibited on a low table.

First Grade - "Good Health Rules Through Pictures and Drawings

1. Blowups of photographs of children's health rules - pictures with children demonstrating do's and don't's and printed rules underneath each picture.

2. Student-made "Health Coloring Books" on dittoed sheets illustrating the do's and don't's; crayons to go with books - given out to visiting children.

3. Children's growth records showing comparisons from beginning and end of term. (On printed sheets and arranged according to grades and classes - to be given out).

4. Scale - children weighed people at fair in pounds and converted their weight to metric (right there).

5. Measuring height.

Second Grade - "Green Plants - Our Primary Food Source" - Nutrition

1. Farm display built on a 6' x 4' board. Models of barn, silo, animals, fence and rows of growing plants from seeds planted by students. On one side, pictures of the foods they become.

2. Posters - (1) Parts and function of plant
   (2) Seed parts
   (3) Seed cycle
   (4) Photosynthesis
   (5) Phototropism

3. Children's plant growth record and various experiments.

4. Platters of vegetable snacks - carrots, celery, beans, and signs explaining the nutritional value (vitamins, nutrients, calories).

5. Tadpoles.

Third Grade - "Bacteria - Thank You and No Thank You" - Disease Prevention and Control

1. Mural - time-line of man's key advances in understanding disease and its control.

2. Posters - (1) Helpful bacteria: soil, cheese, wine, alcohol
   (2) Growth of bacteria - 1 bacteria splitting every 15-20 min. multiplies into 66 billion in 12 hours.
   (3) Body defense against bacteria: white blood corpuscles, skin, acid in stomach, hairs in nose, fever.

   - (4) Wonder drugs.
   - (5) Godd health rules.

3. Student-made electronic game - match scientist with his or her contribution to health.

4. Exhibit - soil bacteria - 3 trays of dead, dry leaves - shown at various stages of return to soil.

5. Microscope (parts) - exhibit with various prepared slides - bacteria.

6. Petri dishes - demonstration of bacteria growth from hands dirtied by rubbing them on wheelchair wheels, from hands which touched desk tops, from washed hands.

7. Children's reports on "Microbe Hunters".

8. Plant-growth from "dead matter".

Intermediate Grades - Disease - Prevention and Control

1. Mural - names of diseases and incubation rates.

2. Cassette tape program - children's recordings explaining contributions of various "Microbe Hunters".

3. Immunization Schedule Review Station - record of immunization shots given out, to be checked over by parents and child together, verified by parents, and returned by student to the school nurse-teacher.

4. Posters -
   - (1) Kinds of bacteria
   - (2) Definitions of: bacteria, protozoa, virus, contagious disease, epidemic, immunization, symptoms, antibodies, communicable diseases.
   - (3) Good health rules.

5. Film Strips - Walt Disney - "How to Catch a Cold" projected by a student.

6. Microslide Viewers - for viewing of disease-causing agents.

Intermediate Grades - Good Nutrition Vital to Good Health

1. Experiments - "Yeast Needs Food to Grow"
   - (1) Set up yeast in three containers -

watch the yeast growth in corn syrup and water, corn starch and water, sugar and water.
(2) Show dough prepared by kneading the ingredients.
(3) Have loaves of bread prebaked by students as samples.
(4) Give out recipes.
(5) Make metric measurements.

2. Experiments - demonstrate Ice Cream Making (1 time) - show science of cold to liquids to solids.

    (1) Show ingredients (nutritional and caloric values).
    (2) Make a batch of ice cream.
    (3) Give samples (prepared in advance) and kept in freezer.
    (4) Distribute recipes in metric measurements.

3. Posters -
    (1) Good nutrition - 4 basic food groups
    (2) Vitamin chart
    (3) Origins of food: Student-made booklets on topics done as library research
    (4) Calories in food
    (5) Calories - calorimeter - drawing of explanation given in class
    (6) Good health rules

4. Giveaways - Granola cookies given out as sample of food made from all natural ingredients.

5. Game - match food with its calories - use food models made in art to balance weights representing calories. Prize granola cookie.

Intermediate Grades - Dental Health

1. Films - ADA film loop cassettes on dental health.

2. Display tooth model made by students with labeled parts.

3. Proper tooth brushing - demonstration center - use brush and mirror.

4. Crocodile posters and cards (to be given out) from

ADA, listing dental health rules.

5. Experiments - effects of acid on egg shell (12 eggs - 1 per day removed from vinegar) plus poster explaining what could happen to teeth.

6. Game - "Whose Teeth"? - match different kinds of teeth with kinds of animals. Packets with toothbrush, toothpaste, and disclosure tablets as prizes for game.

7. Dental chart - students record own fillings and missing teeth on chart, showing all the teeth.

8. Posters - (1) Dentition
    (2) Tooth decay
    (3) Halitosis
    (4) Function and different kinds of teeth
    (5) Good health rules

9. Dental health booklets made by students and distributed.

Intermediate Grades - Sensory Perception - Care of Eyes and Ears

1. Electronic display of eye parts - "How the Eye Sees"

2. Game - Tongue map - match taste with area - e.g. touch a cube of sugar to correct area and make it buzz. Prize: granola cookies.

3. Color tree - built in art class, demonstrating the color spectrum.

4. Color box - to demonstrate the effect of three different light colors on an object in a room.

5. Prism - formation of spectrum

6. Chart wavelengths of various colors

7. How the eye sees color

8. Color-blindness test demonstrated

9. Posters - (1) Optical illusions
    (2) Light is a form of energy
    (3) Perception posters

10. Eye test - ear test - equipment (eye charts and audiometer supplied and demonstrated by school nurse-teacher).

11. Good health rules.

Intermediate Grades - Our Planetarium - Astronomy and Multi-Experience Activities

1. Mural - Constellations

2. Booth - Zodiac tickets for Planetarium Show.

3. Electronic games - (1) Guess the constellations
   (2) Trip through the planets
   (3) Matching pattern game

4. Sundial cards - given out - demonstrating how sundials worked and how altitude of sun is read.

Pictures - Taken on Location

Eye

1. Reading - good light
2. Wearing glassed
3. Avoiding sharp objects
4. Eye machine - vision tester
5. Watching TV at proper distance
6. Don't rub eyes

Ear

1. Ear Test
2. Do not put objects into ears
3. No loud music - earphones
4. Washing ears with cloths
5. No shouting close to ears.

Nutrition

1. Eating a good lunch - sandwich, fruit, milk, salad

Dental

1. Child brushing teeth
2. Eating good snack foods
3. Rinsing with water (if you can't brush)
4. Dentist visit
5. No chewing on pencils, pens, etc.
6. NO-NO Tooth foods: gums, hard candies, lollipops, etc.

Germs - Diseases

1. Washing hands
2. Cover mouth and nose while sneezing

One sample of a parent's unsolicited reaction to the physical health section of the health education program is included here to indicate results which may not be shown by standardized test questions:

> "Dean is very interested in all fields of science, but especially the health area. I feel that this is due to your presentation of this material. You have made this subject not only interesting, but exciting and fun, which is extremely important. Best of all, I know my son can read and comprehend if he is interested in a subject.
>
> This interest in bacteria and diseases plus their effect on the body has been very helpful in my answering of the numerous questions Dean has about his own health problems. His own health problems are mainly related to the liver and cholesterol, which started as infectious hepatitis. I've been able to explain a little the effects on the liver and why it can't digest fats and throws them into his bloodstream. I believe that he understands why he must be kept on a fairly strict low-salt, low-fat diet, with minor flexibilities.
>
> He has become quite nutrition conscious. Proper foods and vitamins are extremely important for Dean's well-being. At one time, he balked at some of the foods and treats I gave him, as they were different from his playmates, who were eating junk foods. Now he never complains when given healthy snacks. In fact, he has managed to get many of his frineds eating proper foods this past year. I've had many of his playmates' parents questioning me about the snacks I give Dean, as their own children are now requesting them and tell them they don't want junk foods, because Dean says that they are no good for them.
>
> This past year, Dean has become very aware of what is good for his own well-being, and I feel that his makes my job as a parent so much easier."

At the conclusion of the activities for this strand, those special topics and activities rated 4 (very good) or 5 (excellent) by the students and teachers involved, were included in the modules.

The special topics for the modules in Physical Health are listed here:

Health Status K-6

I Daily Health Practices Maintain Fitness

- A. Daily Bathing
- B. Washing Hands and Face Frequently
- C. Eating Nourishing Meals
- D. Care of Skin
- E. Care of Feet
- F. Care of Hair
- G. Care of Nails
- H. Care of Teeth
- I. Good Posture
- J. Standing or Walking or Movement

II Long-Term Health Habits are Important

- A. Getting Periodic General Checkups
- B. Maintaining Resistance to Infection
- C. Participating in Physical Activities

Nutrition K-6

I Importance of Breakfast

II Nutritious Meals and Snacks

III Nutritional Activities Based on Special Needs

- A. Weight Control
- B. Small Appetites
- C. Limited Muscle Power
- D. Bowel Problems
- E. Less Salt
- F. More Salt
- G. Increased Fluids

IV Science Activities and Nutrition

Dental Health K-9

I Dental Health Needs of Disabled Students

  A. Regular Dental Care
  B. Good Oral Hygiene
  C. Nutritious, Balanced Diet
  D. Communication with Parents

II Science Activities and Dental Health

Sensory Perception K-9

I Body Image

II Perception of Spatial Relationships

III Improving Ability to Use and Enjoy the Senses

IV Using Science Activities in Learning About the Senses

Disease Prevention and Control K-6

I Immunizations

II Health Habits Based on Special Needs
(See Physical Health Status K-6)

III Using Science Activities to Learn About Disease Prevention

Health Status 7-9

I Understanding the Relevant Physiology of Disability

Nutrition 7-12

I Good Nutrition During the Teen Years

II Independence in Preparation of Nutritious Meals

Disease Prevention and Control 7-9

I Understanding the Difference Between Physical Disability and Contagious Disease

II The Seriousness of Venereal Disease

Disease Prevention and Control 10-12

I The Importance of Venereal Disease Information to the Physically Disabled High School Student.

Evaluations

A student evaluation of the senior high nutrition program (see table) indicates that:

93% felt there was a need for the program
77% felt they gained important information
100% felt that the knowledge would be helpful to them in the future
85% would recommend it for future classes
85% intended to use some of the knowledge, or the pracical skills they learned, when they are at home or on their own.

Some representative comments on the most useful things they learned were:

"That a nutritious meal is delicious."
"About snacking and what to eat."
"How to cook."

The part the students liked best was about equally divided between cooking the food and eating it, but the most severely involved students, who never go to the stores with their parents, enjoyed shopping in the supermarket best.

TABLE
STUDENT EVALUATION OF NUTRITION PROGRAM

	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
1. There was a need for this program	54%	39%		7%	
2. I gained important information	31%	46%	23%		
3. This knowledge will be helpful to me in the future	69%	31%			
4. I would recommend it for future classes	54%	31%	7%		7%
5. I intend to use some of the knowledge or the practical skills I learned when I am at home or on my own	54%	31%	15%		

6. Is there any area in foods or nutrition that you would like to see added to the program?

7. What was the most useful thing you learned?

8. What part of the program did you like best?

NAME: ______________________________

Parents' Evaluation of Breakfast Program

The elementary school breakfast program served as a culminating activity tying in all the learnings of the physical health strand. This program was evaluated by an open-ended opinionaire given to the parents.

All comments on the breakfast were positive. These are some representative comments:

> "How can you improve on such a great breakfast! Thank you - now I know where Francis has obtained his good eating habits lately. The granola was especially good. I loved the bread too."
>
> "No one can emphasize the importance of breakfast too much. As a former Home Economics teacher, I know from discussions with students how many skip this meal."
>
> "The breakfast was lovely. The importance of this meal was greatly welcomed since Karin rarely eats in the morning. I would like to carry thru with this in the way of making granola at home to eat dry as a snack."
>
> "I am much more aware of the importance of selecting the right foods to eat. The bread was absolutely delicious. I had never tasted any other bread except for white and rye. I'm going to encourage Kerry to eat better snacks - celery, carrots, etc. Thank you."
>
> "I thought the breakfast was quite good and the information I learned about nutrition very informative. I have been trying the suggested menus at home and the children just love them. I even baked the oatmeal bread and found it to be a quick and easy recipe. I could use some information on a nutritional lunch we can pack for the children that do not get the hot lunch in school."

"I'm very glad this emphasis was put on nutrition, as we all need a reminder once in a while as to the value of certain foods. I'm very glad I was able to come."

"I enjoyed the breakfast very, very much. I also feel it was a good experience for my child and I, as before this, we had a hard time communicating about breakfast. I would not let her travel on the bus unless she ate. She thought I was a grouch and now, since teacher says breakfast is nutritious and a must, she realizes I was right. I have since made the oatmeal bread and we enjoy it tremendously. I am very thankful Kerry has such wonderful, concerned, understanding people with her all the time. Thank you for everything."

"The bread with cheese was absolutely great. Heidi never ate sliced oranges, but that morning she had four pieces. The breakfast was a great idea - why not have the kids serve lunch? Heidi really enjoyed baking bread. We bake "Dilly Bread" at home together. We loved the placemats. A wonderful morning."

"I particularly like the novel idea of broiling cheese on enriched bread for breakfast. It is such a good idea for the child who dallies in the a.m. and doesn't like any of the conventional breakfast foods such as cereal, eggs, etc. I have one such child, Lele, with osteogenesis imperfecta who, with an hour and a half to dress, wash, and work up an appetite, still only wants a glass of milk and a glass of juice, period. This nutritious small piece of broiled cheese on enriched bread, she would find small enough to eat.

"I think the breakfast was great. I've always felt bacon and eggs was the best for breakfast, but after trying something different and finding that it works for Rita - that she'll eat it - I'm all for it."

Analysis of and Evaluation of Health-Science Fair

Media

Newspaper reporter and photographer were invited.

Releases and town addresses were arranged in advance.

Staff photographer took pictures, developed and sent them to other local papers.

A videotape was made to show next year's participants.

Parents

Parents were invited by colorful invitations made and delivered by their children

At the fair, parents were invited to participate in demonstrations at each exhibit.

Parents were invited to update their children's immunization records.

Parents were also asked to help their children keep a complete food and snack diary for a week.

Board of Trustees

The Board members were invited to a luncheon and then were taken on a tour of the health-science fair.

Able-Bodied Peers From Neighboring Schools

Classes in the same age groups were invited from two neighboring school districts.

Since there were tastes of homemade ice cream, freshly made popcorn, fruit and vegetable snacks, and science games to play, and an hourly show on perception and optical illusions conducted by our students in the 360° theater and planetarium, they could enjoy participating and talking to our students.

Involvement of Entire Faculty

The health-science fair was presented as an inter-disciplinary activity which involved every faculty member in some way.

They prepared posters and exhibits in art, made cassette tapes for their exhibits and wrote letters of invitations in language arts.

Nutrition exhibits involved the home economics teacher.

Immunization records, and eye and ear tests involved the school nurse-teacher.

The science and health education teachers had worked with the students throughout the year to have each lesson result in a display or a project.

Students measured their classmates' height and weight and converted them into metric measurements - which involved the arithmetic teacher.

The history of man's triumph over diseases was incorporated into a giant time-line in social studies.

Local Health Professionals and Organizations

Local health professionals, business men, and representatives of disability-related organizations were interviewed by the students to obtain firsthand information on current community health problems.

Effects of the Event

Publicity

Pictures with short but favorable comments were published in The Press, and a few north and south Nassau community newspapers. A story appeared in Newsday.

Parent Enthusiasm

Parents became more conscious of their own favorable feelings towards the program as they wrote their comments.

Favorable letters continued to come in for a week after the fair.

Liaison Activities With Neighboring School District

As a result of the cooperative spirit demonstrated by the student visitors, a peer-to-peer cooperative learning project was set up between our school and one class in the neighboring school. Learning projects were carried on during which the groups each spent one day a week together. They met alternately at our school and at the neighboring school for projects in neighborhood mapmaking, cooking, swimming skills development, and preparation of an audio-visual project on friendship.

Improved Communication Among All Who Worked With the Students

Since many teachers were involved in helping each group, they had the opportunity and the impetus to share their understandings about the needs of each student. They also had the opportunity to appreciate each others' resourcefulness.

The large number of volunteer teacher-aides who helped, expressed satisfaction in feeling really needed and appreciated by the teachers.

Increased Feeling of Involvement of Students

Because every student had a part in the planning, preparation and demonstration of the exhibits, each one felt motivated to learn about the project he was demonstrating - and each one felt that he was a necessary part of the fair.

Increased Community Interest

Because, in the course of "researching" their projects, the students interviewed local health professionals and business men, these people became more conscious of the project's existence.

By writing for information to local chapters of mental health and disability-related organizations, some students have begun a correspondence with people in these organizations. Three have since come to the school to speak to classes.

Increased Numbers From Local Health Organizations Taking Tours of the Center

Invited visitors from local health organizations brought back groups to participate in the Center's Tours and Seminars Program.

Affected Were

34	school districts
100	students
12	teachers
15	volunteer teacher-aides
60	visiting students
2	visiting administrators
235	adult visitors - parents and friends
10	board members
6	newspapers
8	representatives of local organizations

Activities at Human Resources School Related to Mental Health (Strand III)

Mental Health Activities for Elementary Students

I Meeting More Friends - Parents and School Provided Opportunities to Meet Friends

A. Parents' meetings encouraged parents to provide a home environment for friendship to grow by inviting other children to their house for special activities, and to take their children to out-of-school social activities.

B. The school provided activities like the science fair to which students from other schools were invited.

C. The school afforded opportunities to meet as many school friends as possible by having flexible intergrouping for teaching among 55 intermediate students in a large open classroom.

D. Class projects on making and being a friend have included role-playing, letter writing, learning the social graces through practical experiences in class parties, discussions about our students' feelings that they must "prove" themselves or compete for the friendship of non-disabled peers.

II Identification with Appropriate Sex

A. Disabled boys are most often cared for, bathed, and toileted by their mothers long after the age at which most boys have privacy and independence in these daily activities. Therefore, a number of school activities were designed to encourage the fathers to take an active role in their children's lives. Fathers and/or male relatives and friends were invited and included in the following:

1. Holiday programs and performances presented by the children.
2. Saturday participation in the infant and preschool programs.
3. Family picnics on the campus of school grounds.
4. Family swim and recreation days.
5. Open school night.
6. Regular PTA activities this year; dance, fun auction, spaghetti supper, wine-tasting party. Informative meetings on: curriculum, psychology, mental health, college and vocational preparation, and providing for the disabled child after parents' demise.

III Development of Positive Self-Concept and Positive Attitudes

A. Center-wide cooperation to develop positive self-concept in all the students by having:

1. An approving milieu.
2. Opportunities to excel: Academically - academic success experiences in the classroom through individualized prescriptive teaching, elementary health science fair, Junior Red Cross essay and poetry contest. In Sports - Field Day, basketball team, track and field events for the handicapped. Shows - for Board of Governors, parents and distinguished visitors.
3. Experiences in independence - class trips to stores, the U. N., major league baseball games, the circus in Madison Square Garden, the Bronx Zoo, a pumpkin farm and a visit to Santa Claus.

4. Opportunities to accept responsibility - helping other family members, helping classmates, and doing his own work.

5. Learning to improve their personality.

IV Learning to Communicate

A. Practice in communication - activities which promoted competence were:

1. Original stage production.

2. Puppet shows

3. Making audio cassettes to accompany exhibits or film strips.

4. Telephone conversation practice.

5. Letter writing to friends who have moved away, to classmates in the hospital, thank-you notes to guest performers or to hosts of some trips.

6. Rap sessions which guided students to the conclusion that friendship means relaxing and being yourself and being interested in the other person.

V Developing Peer Group Relationships through Inter-school Project with Non-disabled Students

A. During pre-adolescence, when peer group identification takes on such great importance, the physically diaabled child experiences:

1. The need for opportunities to meet more friends and then to be able to "get together" with them frequently.

2. A desire to show non-disabled peers that he can compete and win in some areas.

3. Worries about being rejected or avoided by non-disabled peers who think a disability makes a person "different".

4. Lack of the social experience of interacting with other children as equals, and so need practice in

communicating about his interests, opinions and ideas. To do this, he needs to find a common ground of interest with others his own age.

B. A peer-to-peer pilot program with a local elementary school provided the opportunity for able and disabled to work together on activities which both can do:

1. Participation in safety health education activities developed the previous year.
2. Cooking together.
3. Library research projects.
4. Swimming.

C. Rap sessions were held with a psychologist and teacher about feelings related to the peer-to-peer project. Discussions brought out feelings about the need to compete and, under the guidance of the psychologist, observations by the disabled students that the best communication with the non-disabled came at lunch or when talking over their activities or comparing opinions on big league sports or TV programs, not during competitive times.

Pre- and post-project meetings were held for the parents, the last meeting being a barbecue and reception for all the parents and children involved in the project. Conclusions showed that Human Resources School students did not show much change in attitudes toward the disabled because they had already scored high in positive attitudes and expectations. The non-disabled students did show positive changes in attitudes toward the disabled.

VI Understanding Human Growth and Development and Human Reproduction

A. The school nurse-teacher, the science teacher, and the classroom teachers have worked together to prepare lessons which impart all the basic information about:

1. The body systems and their functions.
2. Correct terminology for the parts of the body.
3. Conception and development of the baby.
4. Birth of the baby.
5. Physical changes during pre-puberty
6. Changes in feeling.
7. Personality development.
8. Masculine and feminine roles.
9. Aspects of maturation.

Mental Health Activities for Secondary Students

I Personality Development

Team teaching of relevant topics - additional instructional time for mental health was added to the program for all students on the secondary level. A team of experts, including the school nurse-teacher, the physician, the psychologist, the guidance counselor, and the health teacher worked with the students as individuals and in groups on mutually chosen goals:

A. Development of a Positive Self-Concept

1. Discussions of students' abilities and assets led students to assess their previous successes in school and to plan for opportunities for wider success ex-

periences. These include methods of coping with the activities of daily living and the establishment of wider social contacts.

2. The school health team worked with students to broaden their success experiences in travelling to stores, churches, museums, libraries, and recreation areas outside of the home or at school.

3. A number of experiences were added throughout the school and the center with the long-range aim of improving the students' self-concept and independence:

    a. Wheelchair basketball team.

    b. Cheerleading squad.

    c. Pep rallies.

    d. Participation in Wheelchair Olympics.

    e. Student-faculty basketball and volleyball games.

    f. Musical and dramatic play presentations.

    g. Class trips to the State Capital to meet legislators.

    h. Trip to Philadelphia to Liberty Hall, etc. (each trip gives student an opportunity to spend several nights in motels, eat in restaurants, and cope with the activities of daily living).

    i. Recreational trips to Washington.

    j. Other trips: fishing, museums, major league baseball games and cookouts.

    k. Long Island Science Congress participation.

    The school also made arrangements to invite nondisabled students to our school functions and to create opportunities for our students to be invited to school functions at schools for non-disabled students.

4. As part of our concerted effort to develop positive self-concept: Hairstylists spent a day at the school giving a free hairstyling to all boys and girls who wanted one, and two beauty consultants from Glamour Magazine gave lectures, demonstrations, and individual

consultations on skin care and make up to all students.

5. A special bibliography of biographies of physically disabled people was developed by our students. A selection of these books were read and assessed by our disabled students.

6. Peer-to-peer interpersonal relationships were developed between the disabled students at Human Resources School and non-disabled students in other junior and senior high schools through exchange students days.

7. A half day workshop and tour of the school was conducted by the seniors of Human Resources School for a group of Future Teachers of America from another local high school.

B. Development of Emotional Independence

1. Students were given the opportunities and responsibilities for their own physical care, mobility and school work. Class time was spent in helping them understand why this was important for them.

C. Realistic Goal Planning

1. An exploration of interests and opportunities was conducted with the help of the guidance counselor during the elementary and junior high grades.

2. In senior high grades, students were helped to confront their disabilities realistically with the help of the guidance counselor, parents, and the OVR counselor.

3. Then the student was involved in outlining his own plans for the future.

4. Programs in goal planning were held for parents at Human Resources School. The senior high school guidance counselor told how parents can help their children make realistic plans for the future, including informed vocational choices. The Director of the Nassau Office of Vocational Rehabilitation explained the function of OVR in relation to elegibility criteria, and kinds of service provided.

   The vice-president of our Research and Training Center told of research into new types of jobs for the physically disabled.

The director of the Center's Projects with Industry explained the various levels of vocational training provided by the Center.

A speaker from the New York State Employment Office explained the procedures for applying for a job, including applying for a social security card and filling out an application form. He also brought a number of booklets put out by the State Employment Office giving advice for job seekers. He then answered questions about the current employment picture for disabled adults.

D. Reinforcement of Feelings of Control of the Environment and Overcoming Frustrations

1. Students have studied and applied methods of problem-solving and decision-making.

2. Students invited, as guest speakers, successful alumni and other adults who are disabled, as well as professionals who are knowledgeable about disability. The information and advice shared in this program reinforced feelings that frustrations or problems can often be overcome through one's own efforts.

E. Knowledge of Alternatives in Dealing with Interpersonal Relationships

1. Students have practiced and shared their experiences in making new friends.

2. They explored more constructive ways of getting along with parents, schoolmates, and teachers.

F. Desire to Contribute Their Abilities and Talents to the Family and to the Community

1. Students learned to take the initiative in meeting non-disabled people.

2. They practiced answering questions about their disability in a factual way.

3. They decided to "educate" the non-disabled about the abilities of the disabled through demonstration and explanation.

4. Many became involved in volunteer help in the school and/or paid work at Abilities, Inc.

5. Through the junior and senior high basketball team, they travelled widely to demonstrate their prowess in athletics and in cheering.

6. The after-school recreation program added a "coffeehouse" program to which Human Resources School students invited all non-disabled students contacted through the various programs.

II Sexuality

A. Dealing with Physical and Emotional Changes in Adolescence

1. Because some students are relatively helpless, and/or incontinent, and require physical care, their parents tend to continue to regard them as children and do not recognize that they are maturing sexually. Therefore, they needed more opportunities to explore their feelings.

2. Discussions about the feelings, problems, and social behavior of the average teenager, gave insight to those disabled teenagers whose experiences and contacts with non-disabled adolescents had been limited.

3. Enlarging their contacts with able-bodied teenagers was continued in the peer-to-peer student exchange days with local junior and senior high schools.

4. More than the average amount of time was spent on lessons reviewing the physiology of adolescent development. This was necessary because some of our students had missed the instruction in previous years due to extended hospital stays. Others had been on homebound instruction. Many are "protected" by their families and tend to be naive or immature socially.

B. Coping with Special Problems of the Physically Disabled in Socializing with the Opposite Sex

1. Basically, the problems involve:

   a. Logistics - managing the physical details of transportation, accessibility, etc.

   b. Attitudes - of non-disabled toward disabled: disabled toward non-disabled; disabled toward other disabled; and disabled toward themselves.

2. Students worked on trying to cope with these problems of logistics and attitudes in:

   a. Meeting members of the opposite sex - because of the difficulties of transporting them, it is sometimes impossible for many of our physically disabled students to participate in commonly accepted activities whose function is to help young people to meet other young adults, e.g., local school athletic events, community or church dances or social events, activities in playgrounds, parks, or teen centers, belonging to local youth groups and visiting at a friend's house.

      The activities for self-concept enabled them to widen their circle of friends in and outside of school.

   b. Dating - pros and cons of dating a non-disabled person. Pros and cons of dating another disabled person. Debates heightened awareness of their own attitudes.

C. Consideration of Problems of Sexual and Reproductive Ability

1. Through individual counseling with the school physician, nurse, and psychologist, the older students considered the answers to the following questions:

   Can I marry?
   Can I have children?
   Is my disability hereditary?

   In addition, students received the information that there are centers where they can obtain such information when they are ready for it.

2. Genetic Counseling - through individual counseling with the school physician, nurse, and psychologist, the oldest students have considered the following questions:

   What is genetic counseling?
   Is genetic counseling advisable for me?
   Where is it available?

III Family Life Education - Child Care Experiences

Senior boys and girls volunteered their services in both our infant program and preschool classes for disabled children. Through the coordination of the teachers of child development and the prekindergarten and kindergarten teachers, seniors spent three periods a week in Human Resources preschool classes learning to help the younger children with their physical and learning needs, and giving the youngsters a sense of identification with young adults. They learned about the needs of young children and about their own ability to fulfill those needs if they have a family.

A. Beneficial Effects of Family Life Education and Child Development Experiences

1. The opportunity to work with physically disabled preschool children taught our seniors certain basic understandings about caring for disabled children such as:

   a. The importance of movement to the child's physical growth and development.

   b. The importance of play to induce the children to move.

   c. That providing encouragement for communication can help children to develop language skills.

   d. Enriched opportunities can overcome experience deprivation in early years.

B. The Program Benefited the Young Children in Two Ways

1. It improved the self-concept of the little children because a senior cared about them and played with them.

2. It improved their own expectations for the future when they saw the disabled seniors helping them and the teacher, and talking about their independence.

C. The Program Benefited the Seniors in Three Ways

1. It improved the seniors' own self-image because the young children looked up to and admired them, and it gave them an opportunity to be of service to others.

2. It gave the seniors more realistic expectations about their own abilities to care for a disabled (or able-bodied) child.

3. By participation in the infant program, the seniors had an opportunity to observe how mothers can care for and enjoy their disabled babies.

IV Preparing for Responsible Independence

A. Examples of simulation workshop activities which were held to help our students to develop realistic expectations:

1. Make a plan to move to an apartment and be responsible for yourself.
2. Investigate the costs of living on your own.
3. Make a budget. List sources of income and probable expenses such as: rent, utilities, food, clothing, etc. List methods of managing your washing, ironing, cooking, cleaning, shopping.
4. Plan a wedding and reception. By phone and by car, investigate the cost and problems of obtaining an accessible place, the menu, hiring musicians, caterers, photographer. Find out about blood tests required by law.
5. Plan a party. Invite the guests, plan the preparation of the refreshments, plan the decorations, and make a budget of all costs.

At the conclusion of the activities for this strand, those special topics and activities rated 4 (very good) or 5 (excellent) by the students and teachers involved were included in the modules.

The special topics for the modules in Mental Health, Sexuality and Family Life Education are listed here:

Mental Health K-3

I The Family as a Social Unit

A. Children's Role
B. Parent's Role

II Understanding the Life Cycle

- A. Male and Female Gender
- B. Meaning of Reproduction
- C. Parents' and Child's Role in Caring for Babies

III Human Growth and Development

- A. Physical Development and Body Image
- B. Social Development and Friendship

Mental Health 4-6

I The Family as a Social Unit

II Role Arrangements in Family Life

- A. Role Identity
- B. Human Reproduction

III Personality

- A. Positive Attitude and Positive Self-Concept
- B. Improving Personality Through Communication
- C. Experiencing Independence
- D. "Modeling" - Learning From Older Disabled Students

IV Growing Toward the Teen Years

- A. Individual Patterns of Physical, Social, and Emotional Development
- B. Body Image and Attitude Toward the Physically Developing Self
- C. Peer Relationships

Mental Health 7-9

I Why We Do the Things We Do

- A. Positive Self-Concept
- B. Handling Frustrations and Solving Problems
- C. Using Leisure Time

II Learning More About Ourselves

- A. Teenage Concerns
- B. Values
- C. Realistic Goal Planning

III Dimensions of Maturity

- A. Physical Maturity and Adolescent Development
- B. Emotional Maturity
    - 1. Communicating
        - a. Asking For and Refusing Help
        - b. Educating Others About Disability
    - 2. Attitudes Towards Oneself and Others
    - 3. Making and Keeping Friends
    - 4. Accepting Responsibility

IV Boy-Girl Relationships During Adolescence

Mental Health 10-12

I Personality Development

- A. Self-Concept and Emotional Health
- B. Motivation - Learning How Other Disabled People Succeeded
- C. Structured Leisure Time
- D. Death

II Sexuality

- A. Dating
- B. Problems of Sexual and Reproductive Ability
- C. Human Development and Disability Occurrence
    - 1. Fetal Development and Disability
    - 2. Heredity - Its Influence on Certain Disabilities

III Family Life Education

- A. Understanding One's Parents
- B. Preparing For Responsible Independence
- C. Realistic Goal Planning
- D. Single or Married Adult Life
- E. Experiences in Child Care

A summary of the results of the Mooney Problem Checklists showed that the physically disabled students on the secondary school level checked the following problem areas in the order listed:

Junior High School

School	141
Health and Physical Development	136
Relations to People in General	105
Money, Work, the Future	104
Self-Centered Concerns	103
Home and Family	88
Boy and Girl Relations	70

Senior High School

Adjustment to School Work	194
Personal-Psychological Relations	194
Social-Psychological Relations	183
The Future: Vocational and Educational	174
Courtship, Sex, and Marriage	145
Social and Recreational Activities	145
Morals and Religion	130
Home and Family	125
Health and Physical Development	124
Finances, Living Conditions and Employment	120
Curriculum and Teaching Procedure	109

Concepts and learning activities in the mental health modules were developed by using this list of students' concerns as a basis.

STUDENT EVALUATION OF THE MENTAL HEALTH, SEXUALITY AND FAMILY LIFE EDUCATION PORTION OF THE PROJECT

	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
1. The family life and sex education class was worthwhile	60%	25%	5%	10%	0%
2. I thought the whole presentation was appropriately frank	40%	40%	10%	10%	0%
3. Most of my questions have been answered	40%	40%	10%	10%	0%
4. The information was easy to understand	35%	45%	5%	5%	5%
5. The class helped me to gain new insights into human relationships	40%	35%	5%	10%	10%

Name and describe your disability:	At beginning of project 50% could	At end of project 95% could
What areas were most interesting:	Child development experiences; Working with pre-schoolers	
What areas were most helpful:	Dating, friendship, guest speakers, physical maturation	
List problems related to personality development, sexuality, and family life education that you have encountered because of your specific physical disability:	Dependency on other people; Lack of friends outside of school; Unable to meet or go on dates; Can't go wherever I want	

In what ways has this course enabled you to approach your problems in a more positive way:	Most felt that their increased knowledge, and insights resulting from the discussions, helped them to cope in a more mature way.

Typical Responses

"It's given me a brighter outlook on my life problems. I can face them better and handle them in a more mature way."

"I can make the best of it."

"To realize that you can't always get what you want and try to cope with what you have."

"I thought my development was abnormal. It made me feel better. I learned that I still have time to develop."

"It made me more open."

What topics should be discussed if the course is repeated:

General Problems

"Having babies."

"Sexual contact."

"Being teased and made fun of."

Problems Related to Your Specific Disability

"Whether the disability would hamper sexuality."

"Dependency on other people."

"Talk about our disability outloud - let the other kids know just what is wrong with you so that we can understand each other better."

"Progress report on finding cures for our disabilities.

"Meeting new friends."

"Get together with parents and staff and other kids to talk about our feelings."

"If we can have children."

Acceptance of Disability Scale

The Acceptance of Disability Scale by Donald Linkowski was used as a measure of the students' psychological adjustment to their physical disabilities. Observations by the entire project committee agreed with the hypothesis of the AD Scale's author, that greater acceptance of disability does not correlate with severity of the disability, but seems to be a quality of how the person perceives his own limitations.

The test gives 6 levels of agreement or disagreement with 50 statements about the effect of a disability on a person's future, social life, happiness, etc. A possible perfect score would be 300. The students took the test at the beginning and end of the third year of the project.

The average score at the beginning was 239.3 and at the end of the year 241.3. Although the improvement is not significant, the fairly high levels at the beginning of the third year indicate a better than average adjustment to disability among the students at Human Resources School. An already high score was difficult to improve upon. It is regretted that this scale was not given at the beginning of the first year since the project staff feels that more significant improvement occurred during the second year. Results backed up the claim that severity of disability did not seem to correlate with higher or lower scores.

Activities at Human Resources School Related to Sociological Health Problems (Strand II)

Sociological Health Problems

Drug abuse and alcohol abuse have not been problems at Human Resources School. However, several special considerations made a program for drug education and drug abuse prevention very important for our physically disabled students.

Our students learn to drive in their senior year. Once they are able to drive, contact with sources of drug supply will be just as accessible to them as to the average mobile young person. Then, naiveté, pain, discomfort, frustration, boredom, or lack of ability to cope with problems might make them feel inclined to try drugs. They may also be more anxious for peer approval or more susceptible to peer pressure.

A number of physically disabled students take medication and need to understand the reactions possible from mixing drugs or alcohol with their medications. For students who are prone to respiratory problems, or cardiac or seizure disorders, or who take medications which affect the central nervous system, combinations of medications and drugs or alcohol constitutes a very special danger. As students on long-term medication get older, they must also be aware that dosage and type of medication will probably change.

Drugs and alcohol would cause additional problems for the physically disabled in coping with their environment and would aggravate problems in self-concept. The program aimed to make students aware of these possibilities so that they can make wise choices when they are in a position to do so.

A very close relationship among the parents, guidance counselor, physician and school nurse-teacher made possible a team approach to helping the students when a problem arises.

Involvement of Parents

With severely disabled young people who may not ever be completely independent physically, the desirability of the involvement of their parents in either prevention or in helping with treatment became apparent to the health project team. A great deal was done to help the parents to help themselves and their children. Frequent small group meetings gave parents information and counseling from medical and psychological professionals or from representatives of social service agencies. The aim of many parent-school contacts was to help the parents understand that, if they accept the responsibility for helping their children to develop socially, to make contact with the world, to develop creative interests and hobbies, and to prepare for employment, they are giving these young people a feeling of accomplishment and self-worth which would make drug use unnecessary.

Parents learned how they could cope with their children's disability. They saw that there can be joy and reward in coping. By seeing that other parents cope too, they became encouraged. They found that mutual parent support was a major benefit of school meetings and programs.

The drug education program used an indirect approach by building on the mental health program which aimed to develop a positive self-concept.

On the elementary level, this was done by activities designed to help students in:

> Learning to cope with feelings by using creative approaches, analyzing why they do things, and discussing their fears and anger.
>
> Handling frustrations and solving problems appropriately.
>
> Recognizing one's own abilities by analyzing the many success experiences which have resulted because of the positive expectations inherent in the school program.
>
> Communicating effectively through a wide variety of experiences in role-playing, play production, language skills activities, and peer-to-peer school programs with non-disabled students.

On the junior high level, the activities focused on developing alternatives to the use of drugs and overcoming boredom and tension. Students explored programs of service to others, creative hobbies and recreational activities, learned how people reach high levels of consciousness by studying world religions, or attending a seminar on some area of ethics, morality or philosophy, and invited experts to explain breathing and relaxation exercises, yoga, and transcendental meditation.

They also practiced assertiveness techniques to develop self-confidence and the ability to resist pressure from others.

On the senior high level, service to the younger students formed the basis for the drug education program. The example of the senior high school students at Human Resources School has been the most important single factor in building the self-concept of the younger children. The elementary school students see the older ones with similar disabilities coping with their environment, accepting responsibility for their own independence, offering service to the school and community, improving in physical status, and engaging in a multitude of academic and social activities. This encourages the younger ones to adopt a positive outlook on the future.

For this reason, we accepted the offer of the seniors to participate in a preventive drug education program for the intermediate-grade students based on building their self-concept and helping them to realize that they do not have to do what someone else tells them to do in order to gain approval "just because they are handicapped".

Senior-Elementary Students Drug Education and Self-Concept Building Program

The senior high school students conducted a project with the elementary grade students consisting of the following:

1. Sharing factual information about each category of drugs: stimulants, depressants, hallucinogens, alcohol, deliriants, over-the-counter drugs, and medications.

   For each category, answering the following questions:

   Why people take the drug?
   The good and bad effects of the drug?
   The legal penalities for drug offenses?

2. Interesting them in finding out about their own medications and communicating with their physicians and parents about this as a first step in developing personal responsibility.

   After careful home preparation, students reviewed in groups:

   What medications they are taking, or have taken, and why.

   How that medication is helpful.

   The importance of taking the medication according to their physicians' directions.

   Whether there would be any problems in mixing their medication with other medications or with drugs or alcohol.

3. Encouraging them to know what their disability is and how drug abuse could make their problems worse.

4. Helping them to develop personal responsibility:

   Seniors shared their experiences in coping with problems related to their disabilities.

   Groups discussed ways of handling a situation when you do not want to do

> what someone is asking you to do - including role-playing and handling of peer pressures to try drugs.
>
> Individual rap sessions covered such topics as helping others, handling fears, anger, and boredom, accepting personal responsibility for yourself and your health.

Effects on Seniors

Each of these areas had to be thoroughly prepared by the seniors who did individual and group research; studied, reviewed, and rehearsed the facts that they were going to teach.

In the preparatory sessions, they brought up questions which were followed up and answered by the school nurse-teacher and the physician about the side effects of each of the medications they themselves were taking.

In explaining the topics to the younger students, the seniors demonstrated a sense of responsibility and commitment that impressed both the teachers and the younger students. Each group doubled the effect of the lessons on the other group.

At the conclusion of the activities for this strand, those special topics and activities rated 4 (very good) or 5 (excellent) by the students and teachers involved, were included in the modules.

The special topics for the modules in Sociological Health Problems are listed here:

Grades 4-9

I Development of Positive Self-Concept

- A. Coping With Feelings
- B. Handling Frustrations and Solving Problems
- C. Recognizing One's Own Abilities
- D. Communicating

Grades 7-9

I Developing Alternatives to the Use of Drugs

II Developing Self-Confidence Through Assertiveness

Grades 10-12

I Sharing and Service to Others Through a Combined Drug Education Project

- A. Sharing Factual Information About Drugs and Alcohol With Younger Students
- B. Explaining Possible Reactions From Mixing Medications With Drugs or Alcohol
- C. Teaching How Drug Abuse Could Increase Disability Problems
- D. Helping Younger Students to Develop Personal Responsibility

Grades 4-12

I Smoking and the Health of the Disabled Student

ELEMENTARY STUDENT EVALUATION OF DRUG EDUCATION PROGRAM

NAME:__________________ DATE:____________________

	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
1. They told me what I wanted to know	47%	43%	5%	5%	0%
2. They gave me the knowledge about drugs that I didn't have before	58%	32%	10%	0%	0%
3. They showed me that I can make a mature decision about taking drugs.	80%	10%	10%	0%	0%
4. I have now found out about any medicines I take or have taken.	37%	32%	10%	0%	0%

21% Do not take any medicine

SECONDARY STUDENT EVALUATION OF DRUG EDUCATION PROGRAM

NAME:______________________ DATE:__________________

	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
1. We gave them information they didn't have before	78%	0%	22%	0%	0%
2. On the basis of our teaching, I think they can now make a more mature decision about drugs.	22%	22%	45%	11%	0%
3. I feel they would benefit by additional individual sessions	45%	33%	11%	11%	0%
4. I would like to do more individual teaching.	56%	22%	11%	11%	0%

Both elementary and secondary students evaluated the project favorably. 45% of the secondary students were both modest and realistic in refusing to claim that their teaching would enable the elementary students to make a more mature decision about drugs, but 90% of the elementary students claimed that the secondary students had helped them by showing them that they could make a mature decision about taking drugs.

A majority (78% of the secondary students and 90% of the elementary students) agreed that the elementary students had acquired a great deal of new knowledge.

An additional evaluation of the beneficial effect on the secondary students was proven by the administration of the Gelolo Drug Knowledge Inventory. Their pre-test mean score was 53% and their post-test mean score was 76%.

Activities at Human Resources School Related to Safety (Strand V)

The project committee, with the advice of consultants, decided to start with one of the five strands of the New York State Health Education Curriculum and to work it through as completely as possible as a pilot unit the first year. Survival and safety education was chosen because of its exceptional importance to the physically disabled in the opinion of teachers and parents, and because of the worries expressed by so many students. Safety activities could also be carried on all during the project and would be the most visible reminder of the project. As a project culmination, an in-service course for the faculty was based on the safety considerations developed for each disability.

Concerns of some senior high students with muscular dystrophy about safety in case of emergency:

a. "I live upstairs."
b. "I can't get out of the house by myself."
c. "I can't dial a phone."
d. "I can only communicate with people out of the room by screaming."

a. "I can't get out of my room by myself."
b. "I may be left somewhere."
c. "No telephone in my room."
d. "I may lose my balance."
e. "No stickers on my house saying I'm handicapped, in case of fire."

a. "It takes long to get out of my room - narrow hallway."
b. "Steps going out of house."
c. "Can't pick up phone alone."
d. "Some doorways are narrow."
e. "Can't push myself in wheelchair."
f. "Cannot move myself to a window or a door to call for help."
g. "If ever left alone in the house, I cannot help myself."

The desperation of families who can never leave the house without worrying about the danger is indicated by one answer to the question, "What safety precautions do you take when leaving your disabled child?"

"Sometimes I alert a neighbor, but when I can't, I pray a lot. I seldom leave him alone."

To get this 15-year-old boy out of their second floor apartment, he is put on a stairglide, then transferred to another wheelchair. Outside, they place portable ramps for the 3 front and side steps.

By reviewing the students' answers to the test questions related to this strand, and then reviewing the results with the students, the teachers pinpointed needs for each child and for each disability group at each age level.

The health behavior inventories served as a basis for starting to choose activities to improve health habits and attitudes by designing health related activities with the cooperation of the students themselves. The students filled out requests for CBRUs which would help them achieve the goals they set for themselves.

Printouts from the Computer-Based Resource Units in Health Education were obtained from the New York State Computer. These guides considered the special learning interests, physical age and mental age of each child. Their disabilities, however, were not able to be considered because this aspect of some children's needs is not programmed into the computer.

These CBRU guides served as a basis and departure point for developing more specialized units of activities, content, etc.

Then the students developed units by combining the resources of the CBRUs with all the ideas flowing from the information obtained from the assessment data.

By June, they developed the pilot topic into individualized modules with concepts, content, activities, self-evaluations, and bibliography:

a. specific to the nine disability categories of the students at Human Resources School

b. for all grade levels K-12

c. containing background information for students and background information for teachers working with students

In writing up the Safety Education modules, the project committee included all the topics given in the New York State curriculum guide and added Activities of Daily Living. After these modules were completed, the committee found that all of the curriculum guide can now be obtained on microfiche through ERIC. Therefore, in writing up subsequent strands, only topics with special implications for the physically disabled were included even though the regular topics were also taught to our students.

At the conclusion of the activities for this strand, those special concepts and activities rated 4 (very good) or 5 (excellent) by the students and teachers involved were included in the modules.

The topics for the modules in Safety Education are listed here:

Safety Education K-6

- Activities of Daily Living
- Traffic Safety
- School Bus Safety
- Water Safety
- Fire Safety
- Home Safety
- School Safety
- Outdoor Safety

Safety Education 7-12

- Accident Problems
- Safe Behavior
- Safety in the Home
- Safety in School
- Safety in Physical Activities
- Safety in Recreational Activities
- Safety at Work
- Safety in Driving
- Safety in Emergencies

Evaluations

A student checklist self-rating (see Tables 1 and 2) of their understanding of safety knowledge indicates that 89% to 98% of elementary students and 83% to 98% of secondary students rated their knowledge as good or very good as a result of the modules. In rating their safety behavior, 83% of the elementary students and 50% of the secondary students said they were now more careful.

Behavior is notably more difficult to change than is knowledge. In some cases, the students were unable to influence others who had control over their safety and thus did not feel that they had the power to be any more careful than they already were.

Further indications of improvement as demonstrated on the standarized AAHPER Cooperative Health Education Test and the Health Behavior Inventory (Yellen and Johns) will be summarized at the end of this report.

TABLE 1

ELEMENTARY GRADES

SELF-RATING OF SAFETY KNOWLEDGE

	VERY GOOD	GOOD	NOT TOO GOOD
1. Activities of Daily Living	49%	44%	7%
2. Traffic Safety	57	37	6
3. Bus Safety	69	29	2
4. Water Safety	62	32	6
5. Fire Safety	60	29	11
6. Home Safety	68	29	3
7. School Safety	66	31	3
8. Outdoor Safety	60	37	3

SELF-RATING OF SAFETY BEHAVIOR

MORE CAREFUL	SAME	LESS CAREFUL
83%	17%	0%

TABLE 2

SECONDARY GRADES

SELF-RATING OF SAFETY KNOWLEDGE

		VERY GOOD	GOOD	NOT TOO GOOD
1.	Accident Problems	45%	53%	2%
2.	Safe Behavior	38	48	14
3.	Safety in the Home	61	34	5
4.	Safety in School	54	40	6
5.	Safety in Physical and Recreational Activities	47	40	13
6.	Safety at Work	42	50	8
7.	Safety in Driving	47	36	17
8.	Safety in Emergencies	47	51	2

SELF-RATING OF SAFETY BEHAVIOR

MORE CAREFUL	SAME	LESS CAREFUL
50%	50%	0%

As a result of the questionnaires filled out by students, parents, and teachers, the following special safety considerations were drawn up to guide teachers of students with each type of disability.

Special Safety Considerations for Teachers of Students with Dysautonomia

Because of insensitivity to pain, caution is needed about children putting fingers in doors, in touching radiators, and handling matches.

Occasional dizziness caused by labile blood pressure may require some time to lie down. High climbing should be avoided by these students.

Some students wear body braces to prevent scoliosis and problems of balance or tripping over clutter on floors can occur.

Lack of sensitivity to room temperature requires that the teacher encourage lighter or warmer clothing as the room temperature warrants.

Lack of tears necessitates caution against dust or eye irritants. Some students wear eye goggles which act as a moisture chamber. They usually also have (synthetic tears) eye drops administered by the nurse several times a day, on a physician's orders. These procedures should be conscientiously encouraged by the teacher to prevent ulcerations to the eyes.

They may also need to go to the nurse to use a respirator to expel mucus.

Special Safety Considerations for Teachers of Students with Spina Bifida and/or Paralysis of Lower Extremities

The congenital defect in the closure of the spinal canal causes students to lack feeling below the level of the lesion of the spinal cord.

Lower extremities may be insensitive to pressure, friction, pinpricks, and heat or cold.

No treatment will cure the paralysis or absence of sensation. Hopeful aspects are that in most instances, trophic ulcers and deformities can be prevented, the child can become socially acceptable through a bladder and bowel training program, and he can usually learn to walk with the aid of braces and crutches.

Since walking with braces is a laborious procedure, a wheelchair for part-time use may prevent excessive fatigue in traveling long distances. They should be urged, however, to assume a standing position, preferably once an hour, to relieve circulatory and urinary stasis and to prevent development of hip and knee flexion contractures.

For students who ambulate in a lower body brace and leg braces by using crutches, cautions include slippery floors, obstructions, and clutter. For students in wheelchairs,cautions include architectural barriers, stairs, rainy or wet surfaces.

To overcome hydrocephalus, which sometimes occurs, causing abnormally rapid and excessive enlargement of the head, a shunt may be used to permit the cerebrospinal fluid in the brain to by-pass the point of obstruction. In this case, special caution must be exercised to prevent injury to the head by falls or blows.

Special Safety Considerations for Teachers of Students with Muscular Dystrophy

Progression of the disease requires an understanding of the problems at each stage so that they can be dealt with.

While the student is still in the early stages, increasing muscular weakness may cause him to drop suddenly. He is unable to stop himself and often falls straight down and rather hard. At this stage a securely and flatly carpeted room area cushions the fall. Square-edge furniture, etc. can be minimized to avoid falling against them.

When the student is in the middle stages and is starting to use a wheelchair out of necessity, his reactions to the situation are often displayed by angry words, perhaps swearing, striking out, spitting and using chair as a "weapon." Safety hazards to other students at this time may be diminished by making provision for many activities which may be successfully achieved in a wheelchair, deemphasizing those for which strength is necessary.

When the student is totally confined to a wheelchair, carpeted surfaces are more difficult and exhausting to roll over, and independence is discouraged if he must often ask to be pushed. Since he should maintain arm function as long as possible by moving his own wheelchair himself, unnecessary obstacles should be minimized.

If the use of an electric wheelchair is available when the student is no longer able to push himself, its use gives the student a feeling of independence and achievement.

Special Safety Considerations for Teachers of Students with Arthrogryposis

Arthrogryposis is characterized by stiffness of many or all joints of the extremities, combined with muscle weakness. Since these students cannot bend their arms at the elbows, heights of tables or desks can present difficulties for writing, or handling books or equipment, putting on coats or sweater, turning doorknobs. Feeding themselves may be a problem for them too. Special precautions must be observed in handling of matches and hot objects.

They would also have difficulty breaking a fall with their arms.

Since some also cannot bend their knees, they need assistance in sitting down and rising from a chair. The chair must be sturdy and of a non-sliding type to prevent falls. Help is best given by holding them under the arms while standing behind them. For these students, polished or wet floors are doubly hazardous and stairs are too hazardous. Their stiff-legged gait makes falls a constant possibility, and cluttered or bumpy floor surfaces are dangerous.

Crutches and braces are used by some Arthrogrypotic students. Some also use wheelchairs for traveling any distance. Modifications of architectural barriers should be adjusted accordingly.

Stiffened joints make participation in active sports difficult and adaptations must be made by the teacher to eliminate hazardous situations in which the student cannot lift his arms to shield his head from a blow nor move quickly to avoid injury.

Special Safety Considerations for Teachers of Congenital Amputees

Modern surgical and rehabilitation techniques have enabled children to use prosthetic arms and legs from their earliest years. Many physicians stress the importance of encouraging the student to use his prosthesis early to help ambulation which will stimulate bone growth and prevent atrophy and secondary deformities.

The hazards in using a prosthetic arm are related to possible injury to the arm from matches, lifting excessive weight, etc. Caution must also be exercised to avoid hitting others with the prosthetic arm.

Students who have prosthetic legs need sturdy arm chairs to assist them in sitting and rising. Slippery floors, loose rugs, or clutter may cause them to lose their balance.

Since emergencies may occur at a time when a student is not wearing his prosthetic arm or leg, he also needs to learn to function without it.

Special Safety Considerations for Teachers of Students with Osteogenesis Imperfecta

Students with brittle bones may sustain a fracture from even slight pressure or bumps. Special precautions must be taken not to pull or bend their arms while helping them dress.

They often wear body and/or leg braces and use wheelchairs for mobility. They should be discouraged from tilting backward in the chair or from engaging in physical activities which allow contact or fast wheeling.

Frequent fractures during the early years cause the child to be in casts and he often needs a rolling litter or wheelchair with an adjustable back. If someone pushes his wheelchair, caution is needed against jarring, bumping, or bouncing.

As these students progress into their teens, they seem to have fewer fractures and often have strong arms. Some students can then manage limited ambulation on crutches. In these cases, precaution should be taken against slippery or cluttered floors.

The same students who have fewer fractures and strong arms can also engage in wheelchair games with the encouragement and supervision of their teacher.

Special Safety Considerations for Teachers of Students with Achondroplasia

Since students with Achondroplasia can usually use their arms and legs well, their only major safety consideration is related to their diminutive size. Their height compared to their peers' is so much shorter that they are liable to be knocked over in crowded halls.

High steps, curbs, and bus entrances might be a problem. Limited reach may cause climbing for books or equipment on shelves. Instruction in proper use of stools and ladders is, therefore, a special safety requirement.

The classroom shelves, doorknobs, and furniture should be adapted so that size does not hinder students from functioning efficiently in an emergency. Special planning might be required to eliminate unsafe situations in sports activities in which height is an advantage.

Properly fitted clothing becomes a special need, not only for style, but for safe participation in activities of daily living. By encouraging the student to consider the importance of proper clothing, the teacher is advancing his general safety.

Special Safety Considerations for Teachers of Students with Congenital Cardiac Conditions

Problems of students with Congenital Cardiac problems or Rheumatic Heart Disease may require avoidance of fatigue or tasks which are too physically demanding. Scheduled rest periods or special adaptations and a careful choice of extra curricular activities may be encouraged by the teacher according to the limitations placed on their activities by their physician. Some physicians find that for many cardiac children their activities are self-limiting and that constant reminders not to run, etc. may cause the child to worry unnecessarily. The teacher must balance cheerful encouragement with sensible caution.

Use of a wheelchair when traveling in school hallways may limit fatigue.

A safe, calm environment can avoid shock reaction from trauma or accidents.

Planning for a convenient arrangement of materials will conserve energy and eliminate accidents associated with fatigue or weakness.

Since rough or contact sports are usually inadvisable, the teacher can contribute to the student's alternative methods of participation in group activities which would satisfy his need to feel included.

Special Safety Considerations for Teachers of Students with Hemophilia

Prevention is preferable to treatment of bleeding episodes.

A hemophiliac student often does not appear handicapped to the other students because he can walk without crutches or braces. He would receive no special consideration in crowds or on the playground. The teacher's watchful eye might discern ways of anticipating and avoiding situations which would be dangerous for him.

Sharp corners, scissors, pins, paper cuts, rough contact with others, bruises, blows, or falls may cause external or, more serious, internal bleeding which may require administration of the clotting factor.

Special caution should be advised against anything put in the mouth (like lollipop sticks or pencils, and even foods like fish or chicken containing splintering bones).

A special dentist is needed for dental care and tooth extractions.

Students should be taught to tell which factor they need and the name and telephone number of the doctor or medical center familiar with their needs in case of a bleeding episode. They should also be reminded to wear an identification tag containing this information.

Many physicians feel that over-emphasis on caution may cause psychological stress which also can become a problem in the lives of hemophiliacs. A sensible balance of precautionary preventive measures is needed on the part of the teacher.

Since participation in contact sports is inadvisable, alternative methods of participation, such as managing or reporting assignments devised by the teacher, would contribute to the student's safety.

Learning Activities at Human Resources School Related to Environmental and Community Health (Strand IV)

I Elementary Projects

The elementary students participated in projects for coping with the natural environment - the weather - in realistic ways.

The primary students chose a Weather Report and Prediction Committee which helped their group prepare for and cope with the weather by:

dressing appropriately and caring for their wheelchairs, braces, crutches, or prosthetics in rain or snow

heightening awareness of hazards caused by inclement weather

The intermediate students set up a weather station in which they measured and recorded inches of precipitation, daily temperature, and barometric pressure. They also made notations each day about the effect of air pollution and weather conditions on class members.

They participated in improving their environment. A visit to the town waste disposal facilities was followed by individual efforts to make their own neighborhoods clean and attractive. They learned to dispose properly of waste materials, including disposable diapers. They also planted flower seeds which they took home to beautify their neighborhoods. In addition, they evaluated their community environment for accessibility to people in wheelchairs and learned about buildings and facilities which are usable by disabled people.

They learned to become wise consumers of health services by practicing reporting their symptoms accurately. They also learned to take responsibility for caring for their appliances and wheelchairs themselves.

II Secondary Activities

An emphasis on methods of coping with the environment, both man-made and natural, emerged. Students shared suggestions with each other about making practical adjustments.

They became familiar with sources of health information by writing to health organizations to learn about solutions to problems of disease and disability. The correlation of factors influencing birth defects and disability were studied as well as the treatments now possible for correcting or reducing the effects of birth defects.

They also concentrated on inviting guest speakers who are disabled and who can share experiences and knowledge of overcoming environmental and consumer health problems. Alumni were particularly helpful in sharing information about costs, rights, and agencies which are available to the handicapped.

At the conclusion of the activities for this strand, those special topics and activities rated 4 (very good) or 5 (excellent) by the students and teachers involved were included in the modules.

The special topics for the modules in Environmental and Community Health are listed here:

Grades K-6

Environmental and Public Health

I Adjusting to Weather Conditions and Coping with the Environment

II Participating in Improving the Environment

World Health

I Benefits of Eliminating World Health Problems

A. Roles of UNICEF and WHO

Consumer Health

I Becoming a Wise Consumer of Health Services

A. Reporting Health Problems Accurately
B. Following Physicians's Orders
C. Caring for Appliances or Health Aids Properly
D. Getting Maximum Efficiency from Braces and Wheelchairs

Grades 7-12

Environmental and Public Health

I Coping with Problems the Environment Poses to Persons with Disabilities

II Public Health Practices and Solutions to Chronic and Degenerative Diseases and Genetic Defects

World Health

I Health Organizations: a Source of Information

Ecology and Epidemiology of Health

I Correlation of Factors Influencing Health, Disease, Defect, Disability, and Death

II Hereditary, Congenital, and Familial Defects

Consumer Health

I Quackery and Quacks

II Wise Consumers of Health Services

III Help Available for the Physically Disabled

Evaluation of Elementary Program of Adjustment to Weather Conditions and Coping with the Environment

Prepared for the Weather Conditions

Name	Date	Head and Ears	Hands	Body	Legs and Feet	Care of Appliances

Teachers kept a log on each member of the class.

In evaluating preparedness for the weather conditions, appropriate clothing depended on the disability problem. For example, students without feeling in some area must take care to protect that area from both cold and heat. Those with unstable autonomic nervous systems must have a jacket or sweater that can be removed or put on when their system does not react appropriately.

The teachers observed that the choice of clothing depended a great deal on the parents, so close school-home contacts had to be maintained. Helping the children to learn the reasons for the proper choice of clothing and care of appliances enabled them to take increasing responsibility for themselves as they got older, and resulted in heightened awareness on the part of those who cared for them.

The major improvement was in awareness among the children and willingness to wear what was provided by parents. Most of the parents supplied the best clothing that they could, but were not always economically able to have as wide a variety of jackets, etc. as might be advisable.

Evaluation of Secondary Environmental and Community Health Program

The following questionnaire, given before and after the environmental health program, served first as a basis for discussion and information-sharing, and, at the end, as a means of evaluating the expansion of ideas and knowledge among the students.

QUESTIONNAIRE

Have you found ways of coping with the environment in each of the following circumstances?

Buildings:

		YES	NO	HOW DO YOU COPE?
Do you manage	stairs			
	steps at entrance			
	heavy doors			
	revolving doors			
Getting Around				
Do you ever travel by	public bus			
	railroad			
	subway			
	plane			
	taxi			
	car			
Do you go	shopping			
	to church or temple			
Recreational Events				
Do you attend	movies			
	restaurants			
	concerts			
	big league sports events			
	parties			
	other			

List all the health agencies which could be of help to you in coping with your disability:

List all other agencies which could be of help to you in coping with your disability:

What laws are in effect to help handicapped people?

on a local level: on a state level: on a federal level:

Give your suggestions for changes that could be made in the environment to benefit the physically handicapped.

Responses to the First Questionnaire Indicated That:

Most students have not found ways of coping with revolving doors.

Many have not found ways of coping with heavy doors, except to ask someone else to open them.

Most do not travel by public bus, railroad, or subway.

Most manage stairs with the help of one or more other people.

Most travel by car.

Most attend recreational activities with the help of one or more other people.

Methods of Coping if They do:

"Get carried." - "My father or brother carry me." - "My parents help me up."

"People open it."

"I hop."

"I crawl or get pulled up in my wheelchair."

"I pop-a-wheely."

"Go with someone, take my time, be careful, hold on - but manage very well."

"I use my arms - I have strong arms."

Suggestions:

"Allow a longer time interval for traffic lights, to allow more time to get across street."

"Islands in the middle of the street for people to wait if they can't get across the whole street, having to wait until the light changes again."

"Have a section in movie theaters with room for wheelchairs."

"Have ramps at entrances."

"Adapted curbs."

Responses to the Questionnaire Given at the End of the Same Project Indicate:

At the end of the program secondary students could suggest:

An average of 5 additional ways of coping with their environment.

An average of 6 additional agencies or other sources of help for the disabled.

85% could list laws that help the handicapped, compared to 25% on the first questionnaire.

90% made suggestions for changes in the environment to help the handicapped, compared to 50% on the first questionnaire.

RESULTS

EVALUATIONS

I Ongoing Evaluation

Ongoing evaluation and revision was done on each module.

The units included in each module are those evaluated by the teachers, students, and parents involved and given a rating of good (3), very good (4), or excellent (5), on the following items:

Relevance in fulfilling assessed needs

Helpfulness in improving students' health knowledge

Productiveness in establishing more positive attitudes

Motivation in developing good health habits

Evaluation of student learning was done by the students themselves by performance of the student self-evaluation activities. These activities gave each student the opportunity to demonstrate what he had learned in an enjoyable, non-competitive way.

The self-evaluation activities included in column three, on each page, are the ones rated good (3), very good (4), or excellent (5), by those who worked with them.

II Evaluation by Standardized Tests

A Results of the AAHPER Cooperative Health Education Test

At the beginning and end of the project, students were given the American Association for Health, Physical Education, and Recreation Cooperative Health Education Test on the test level appropriate for their grade. Comparisons of scores were made on the basis of the "converted" scores.

The American Association for Health, Physical Education, and Recreation (AAHPRE) Cooperative Health Education Tests are end-of-course tests designed to measure achievement in health education at the upper-elementary and junior high school levels. At the present time, there are three tests in the series: a pair of alternate forms suitable for grades seven through nine and a single preliminary form suitable for grades five and six. Each junior high school form (Forms 3A and 3B) consists of 60 four-option multiple-choice questions; the upper-elementary form (Form 4) consists of 50 four-option multiple-choice questions.

The three forms of the tests contain questions pertaining to the following content areas: consumer, community, international, and mental health; disease and disorders; personal health care; growth and development; nutrition; drug use and abuse; and safety and first aid. The tests at the junior high school level also contain sex education questions. In answering the questions, students are required to demonstrate and apply their knowledge and to use the higher abilities of analysis and evaluation.

AAHPER

COMPARISON OF MEAN CONVERTED SCORES ON PRE-TEST AND POST-TEST

GIRLS

Grade	Pre-Test	Post-Test	Improvement
4-6	144.5	156.1	+11.6
5-7	150.8	164.6	+13.8
6-8	162.66	168.33	+ 5.0
7-9	165.5	180.0	+14.5
8-10	182.0	187.0	+ 5.0
9-11	166.75	183.0	+16.25
10-12	177.0	183.0	+ 6.0

BOYS

Grade	Pre-Test	Post-Test	Improvement
4-6	144.875	155.625	+10.75
5-7	152.875	159.875	+ 7.0
6-8	147.0	173.0	+26.0
7-9	161.55	170.66	+ 9.11
8-10	166.714	176.0	+10.0
9-11	171.2	174.4	+ 3.2
10-12	177.36	187.36	+10.0

Students Who Participated for Three Years

Grade	Girls	Boys	Total
4-6	6	8	14
5-7	5	8	13
6-8	3	1	4
7-9	2	9	11
8-10	1	7	8
9-11	4	5	9
10-12	3	11	14
			73

This is a summary of the improvement by grade in mean converted scores of the 73 students who remained in the program for three years, and started in grades 4 through 10 and finished in grades 6 through 12.

Because of the wide variety of physical disabilities, absences, and learning problems, it is difficult to draw generalizations.

The one constant is that there was an improvement in mean converted scores at each grade level. This indicates a gain in knowledge of the regular health education curriculum in addition to the gains in knowledge about their own special health problems as indicated on the parents', teachers', and students' questionnaires.

An improvement on teacher-made quizzes on each unit showed an average gain of 20%.

There is built-in comparability in the various forms of the test which is achieved by converting raw scores to "converted scores." The lower grade level test is not as difficult as the upper grade level test. The student would have to answer more questions correctly on the easier test than on the more difficult one to get the same converted score. Therefore, the "converted scores" can be used as a measure of improvement from one grade level to successive ones, and from one test form to another, and from a lower level of difficulty to a higher one.

On this test, the national norms indicate an expectation of a higher mean converted score at each grade level and the results, in general, followed this expectation.

B Results of the Health Behavior Inventory

At the beginning and end of the project, students were given the Health Behavior Inventory (Colebank, Le Maistre, Pollock, Yellen, Reid, and Johns.) Three forms of the inventory were used, depending on the test level appropriate to the students' grade.

Elementary - Grades 3-6

This level consists of three-choice picture questions. The questions are concerned with actual practices rather than knowledge. They cover daily health habits, diet, routine medical and dental care, and related practices. A single score is obtained. This test was given to first and second graders as well. It was administered orally by the teachers.

Junior High - Grades 7-9

This level contains multiple-choice and completion items. Its three parts cover health practices, health attitudes, and health knowledge. A separate score is obtained for each part.

Senior High - Grades 10-12

This level consists of multiple-choice items based on "problem situations" in health, involving hypothetical experiences of two typical high school students. It covers knowledge and opinions concerning personal health practices and content of health instruction programs.

TABLE

HEALTH BEHAVIOR INVENTORY

COMPARISON OF MEAN STANDARD SCORES AND PERCENTILES ON PRE-TEST AND POST-TEST

PRE-TEST			POST-TEST		
Grade	Standard Score	Percentile	Grade	Standard Score	Percentile
1	40	16	3	55	69
2	47	38	4	63	90
3	42	21	5	52	58
4	39	14	6	49	46
5	42	21	7	41	18
6	47	38	8	52	58
7	36	8	9	46	34
8	46	34	10	43	24
9	44	27	11	46	34
10	41	18	12	53	62

Mean
Standard
Score.....42.4 = 21 percentile

Mean
Standard
Score.....50.0 = 50 percentile

115 students in these grades remained in the program for 3 years.

Others:
- died
- transferred out
- entered late
- graduated before the end of the program

On this inventory the national norms for elementary grades, junior high, and senior high indicate an expectation of similar standard scores. An increase in standard scores and percentiles is observed for 8 out of 10 groups.

The project resulted in:

1. Improvements in test scores on standardized tests of knowledge and behavior.
2. Improvements in student attitudes as demonstrated by pre-project and post-project questionnaires given to students, parents, and teachers.
3. Development of 5 printed strands of health modules, each individualized according to 9 disability categories.
4. Consolidation of background information on each disability as it relates to each strand of health education. This background information is printed in the modules. Aimed at teachers of disabled students, it represents the combined three-year input and experience of faculty, parents, and students.

CONCLUSIONS

In inaugurating a health curriculum at Human Resources School, a great deal of time had to be spent on the most basis general material. For a number of reasons, the students at HRS knew less about health than the average student.

The opportunity to spend more time than the minimal amount required by the state had never presented itself before. Students had missed a great deal of both academic and health education through long absences and hospital stays. The fact that someone else had had to perform a great deal of their physical care had made it unnecessary to learn basic hygiene or health habits. This situation had also delayed or discouraged the development of individual initiative.

Recommendations

The curricula in mental health and physical health recommended for physically disabled students and followed as a basic course at Human Resources School includes the objectives and content topics given in the New York State Health Education Curriculum. We feel that they are excellent. As a matter of fact, our experience has been that our students needed a great deal more time devoted to the content than was required by the state - and we did allow the necessary time.

Since time is a crucial factor in the learning of additional special concepts and information, the health project team concluded that disabled students need more time for health education. The recommendation is for six half-year programs in junior-senior high school on a 3-year cycle of topics, 3 for junior high and 3 for senior high.

In each of the elementary grades, integration with other subjects is recommended on a three-times-a-week basis.

Based on the experience of the project team in this program, a strong recommendation is made to include parents in every aspect of health education. The possibility of parental resistance in some areas was anticipated and eliminated because parents were included in a planning workshop and by questionnaires right at the beginning of the project. As the program developed, parents were included as often as possible - for example, as guests of the nutritious breakfast program, as patrons of the health-science fair, as previewers and advisers for sex-education lessons, as participants in small-group mental health "rap sessions", and as sharers in the endeavor to develop the students' independence.

The project's success was due in part to the wholehearted involvement of the entire faculty, the cooperation of the administration, and the constant monitoring by the project staff which included the project director, the health education teacher, the school nurse-teacher, the physician, and the psychologist. The project staff met weekly, participated in classes and in individual projects with the students, and gave in-service workshops for the staff and the volunteers. They also had participated in all the parent involvement activities of the project. They followed up the workshops with individual help to each teacher and visited classes regularly to give advice and assistance.

These procedures are also recommended.

EFFECTS OF THE PROJECT ON OUR SCHOOL

In addition to the production of a printed curriculum and the improvement of standardized test scores in knowledge and behavior, the project had a significant impact on Human Resources School and the 200 physically disabled students attending it in the following areas:

Parents' Sharing of Problems and "Know-How"

Parents have shared with us the difficulties of coping with the activities of daily living which affect the health of their physically handicapped children. In addition, they have expressed their wishes about what they think their children should be taught and have made suggestions for improved methods of accommodating their children, so that their health could be maintained at a level which would enable them to attend school regularly and be able to concentrate and learn with minimum pain or discomfort.

They have told us how they cope with catastrophic ills and manage to keep their children's mental and physical health at a level ranging from fair to excellent.

Their optimism is reflected in their assessment of their children's adjustment mentally and physically.

Improved Assessment of Needs

The additional personnel time made possible by the project has enabled the school to evaluate each student more completely by test, inventory, questionnaire, record review and personal interviews.

In addition, each student's parents and teachers have been consulted by questionnaire and personal interview.

Improved Communication Among All Who Work with the Students

The physician and nurse have reviewed the physical health needs of each child with the project staff and with all members of the faculty.

There have been special meetings between the nurse, physical therapist, gym, and swimming teachers and project staff to apply the health needs of these students to their activities and to coordinate their gym, swimming and physical therapy with the findings of the physician and the project staff.

Faculty and volunteers have increased communication - teachers by informing the volunteers more fully about the children's disabilities, and volunteers by contributing ideas and suggestions about how to accommodate the children's many small physical problems so that their learning can proceed under more favorable conditions.

Increased Involvement of Students

The students themselves have increased participation in their own program by sharing their needs through the questionnaires and personal interviews and by discussions in class.

The emergence of personal experiences to serve as object lessons has been an unanticipated addition.

The students and their parents have participated in planning individualized programs which relate to their physical disabilities as well as their abilities, interests, age, and mental maturity.

New Ideas for Minimizing Health Problems Have Emerged

Students, teachers, and volunteers have shared methods of accommodating children with physical disabilities so that their health problems might be minimized. These were incorporated into our modules and constitute an important contribution to the curriculum.

Increased Feedback on Relevance of Health Education Curriculum Areas to the Disabled

All have been given an opportunity to express their opinions on the needs of the physically disabled for particular units of health education and to rate the priorities for each student among all the units listed by the State of New York.

Concomitant needs have been highlighted through parent and student feedback. Many have expressed a need for coordinated information to families of handicapped children about such needs as:

a. physical activities for handicapped children in the home

b. advice for the physically handicapped adolescent

c. a directory of health related agencies

d. recreation and leisure time activities

e. lists of public buildings which have access ramps and which have eliminated architectural barriers

Involvement of Entire Faculty

On the elementary level, the entire faculty became involved in helping to develop the activities and background information. After having interviewed the students and helping them to fill out their health questionnaires, and then participating in further in-service meetings with the physician and school nurse-teacher, the elementary teachers all voluntarily contributed time to suggesting ideas for learning activities from which the students could choose to reach their learning goals. They also participated whole-heartedly in working with the students to help them develop modules in their areas of interest.

The team approach to students on the secondary level has enabled us to give the activities a diversified input of expertise and has developed a widespread feeling of involvement on the part of all the faculty.

Weekly planning meetings of the team - the health education teacher, the school nurse-teacher, the guidance counselor, the psychologist, the research associate, and the project director - with additional input from the physician, the assistant headmaster, the basketball team coach - have supplied coordination throughout the school.

Community Cooperation

The health project has resulted in greater cooperation between the school and community. Examples include:

Tours, workshops, and seminars with educational, medical, mental health and professional groups.

Cooperative projects with C.W. Post University, Hofstra University, BOCES, the Council for Exceptional Children, and North Shore University Hospital, and Adelphi University.

Intervisitation of Human Resources School with local high schools, junior high schools, and elementary schools.

Student Acquisition of Both General and Specialized Health Knowledge and Behaviors

The two most important accomplishments of the health project were:

1. The physically disabled students became aware of their commonality with "normal" students in needing to adopt daily and regular procedures for maintaining and preserving optimum health as well as physical and emotional well-being.

   Their improved awareness of health knowledge and adoption of better health behaviors were demonstrated by improved scores on both the AAHPER Cooperative Health Education Test and the Health Behavior Inventory.

2. The physically disabled students gained specialized knowledge and behaviors such as these:

   a. became aware of the special procedures which could minimize health problems related to their disabilities

   b. learned about sources of help for the disabled

c. developed ability to share information about their disability objectively

d. increased their acceptance of the responsibility for their own health and welfare

They demonstrated these gains by developing learning concepts, activities, and self-evaluations which they wrote up for the printed modules. They also showed these gains by improved responses on questionnaires, class tests, and class discussions and projects.

APPENDIX A

BEGINNING-AND END-OF-PROJECT COMPARISON

Student Questionnaire

Please rate your:		Excellent 5	Very Good 4	Good 3	Fair 2	Poor 1	No Answer
1. Knowledge relating to your health needs	1.	39%	37%	17%	6%	1%	0%
	2.	27%	53%	20%	0%	0%	0%
2. Physical adjustment to your disability at this time	1.	43%	24%	18%	11%	4%	0%
	2.	56%	22%	22%	0%	0%	0%
3. Emotional acceptance or adjustment at this time	1.	21%	25%	28%	8%	18%	0%
	2.	41%	39%	18%	2%	0%	0%
4. Socialization with:							
family	1.	61%	8%	21%	4%	3%	3%
	2.	58%	33%	7%	2%	0%	0%
schoolmates	1.	39%	28%	11%	13%	4%	5%
	2.	43%	37%	10%	2%	0%	8%
other friends	1.	51%	17%	10%	10%	8%	4%
	2.	41%	25%	13%	6%	0%	15%
5. Interest in life and surroundings	1.	47%	36%	10%	4%	3%	0%
	2.	49%	43%	4%	0%	0%	4%

* 1. - Beginning
* 2. - End

BEGINNING AND END-OF-PROJECT COMPARISON

Parent Questionnaire

Please rate your child's:		Excellent 5	Very Good 4	Good 3	Fair 2	Poor 1	No Answer
1. Knowledge relating to his health needs	1.	12%	47%	29%	10%	2%	0%
	2.	48%	28%	24%	0%	0%	0%
2. Physical adjustments to his disability at this time	1.	47%	29%	20%	4%	0%	0%
	2.	57%	19%	17%	7%	0%	0%
3. Emotional acceptance or adjustment at this time	1.	46%	27%	21%	6%	0%	0%
	2.	45%	30%	14%	10%	1%	0%
4. Socialization with:							
family	1.	75%	17%	2%	6%	0%	0%
	2.	59%	21%	17%	1%	0%	1%
schoolmates	1.	47%	28%	19%	4%	1%	1%
	2.	51%	34%	13%	0%	2%	0%
other friends	1.	40%	19%	24%	7%	9%	1%
	2.	56%	27%	9%	4%	4%	0%
5. Interest in life and surroundings	1.	55%	23%	17%	5%	0%	0%
	2.	74%	10%	12%	2%	2%	0%

* 1. - Beginning
* 2. - End

BEGINNING-AND END-OF-PROJECT COMPARISON

Teacher Questionnaire

Please rate each of your student's:		Excellent 5	Very Good 4	Good 3	Fair 2	Poor 1
1. Knowledge relating to his health needs	1.	15%	39%	22%	21%	3%
	2.	50%	40%	8%	0%	2%
2. Physical adjustment to his disability at this time	1.	32%	32%	24%	9%	3%
	2.	40%	40%	10%	5%	5%
3. Emotional acceptance or adjustment at this time	1.	29%	31%	30%	6%	4%
	2.	35%	35%	25%	3%	2%
4. Socialization with:						
schoolmates	1.	29%	29%	26%	12%	4%
	2.	40%	35%	20%	4%	1%
others	1.	29%	29%	29%	9%	4%
	2.	30%	30%	30%	5%	5%
5. Interest in life and surroundings	1.	29%	36%	18%	9%	8%
	2.	35%	35%	20%	5%	5%

*1. - Beginning
*2. - End

END-OF-PROJECT EVALUATION

Students

Please check the box which expresses your opinion.	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1	No Answer
1. The health ed program has filled an important need in my learning	27%	50%	12%	4%	6%	1%
2. The program increased my knowledge about health.	34%	49%	6%	4%	7%	
3. I have a more positive attitude toward my health as a result of the program	37%	38%	18%	3%	4%	
4. I have improved in my health habits as a result of the program.	31%	33%	29%	3%	4%	

END-OF-PROJECT EVALUATION

Parents

Please check the box which expresses your opinion.	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
1. The health ed program has filled an important need in my son's/daughter's learning.	43%	35%	20%	0%	2%
2. The program increased his/her knowledge about health.	55%	36%	7%	1%	1%
3. My son/daughter has a more positive attitude toward his/her health as a result of the program.	43%	37%	17%	2%	1%
4. My son/daughter has improved in his/her health habits as a result of the program.	35%	35%	24%	5%	1%

END-OF-PROJECT EVALUATION

Teachers

Please check the box which expresses your opinion.	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
1. The health ed program has filled an important need in my students learning.	80%	20%	0%	0%	0%
2. The program increased their knowledge about health.	90%	10%	0%	0%	0%
3. My students have a more positive attitude toward their health as a result of the program.	80%	20%	0%	0%	0%
4. My students have improved in their health habits as a result of the program.	60%	40%	0%	0%	0%

APPENDIX B

SUMMARY OF INFORMATION ABOUT DISABILITIES COMPILED FROM STUDENT RECORDS

For the general understanding of teachers or aides who might be working with a student with this disability, we have compiled a general summary from the records of the students at Human Resources School. This information represents a variety of findings, since each student has his own physician and may have attended different hospitals or rehabilitation centers.

Therefore, two important points must be noted. One is that each child is different, and so is the severity of his disability. The other is that medical procedures and recommendations are constantly advancing and changing, and these findings represent only a summary of the past.

Summary of Information Compiled from Records of Students with Dysautonomia

Dysautonomia

Genetic condition found in Jewish children of Eastern European extraction. Affects function of autonomic (involuntary) nervous system. Skeletal involvement, such as scoliosis, often occurs.

Symptoms

Lack of tears

Insensitivity to pain

Vomiting

Blotching of skin

Unstable temperature - fluctuations unrelated to infections

Unstable blood pressure

Emotional instability

Delayed development (Riley-Day Syndrome: late motor development, floppy appearance, tendency to vomit, some degree of pseudo-retardation due to lack of experience and exposure early in life)

Hospitalizations and Treatments

Nerve biopsies (nerves have areas without normal bundles)

Eyes: histamine and mecalin

Special Problems Noted and Recommendations Made by Doctors

Problems

Corneal ulcers

Gastro-intestinal problems

Bladder problems - incontinence of urine

Skeletal system: scoliosis, deformities of long bones, embarrassment of respiratory system

Tendency to become fatigued easily because of weaker muscles, diminished respiratory function, lower endurance

Sleep often interrupted by URI or vomiting

Short life expectancy - death possible from aspiration, cardiac or respiratory failure, high fever, fluctuating blood pressure

Recommendations

Therapy: derotation exercises for scoliosis, ROM and active assistive exercises, breathing exercises

Back brace if scoliosis is severe

Artificial tears to be administered several times daily

Quiet firmness on the part of teachers and others in authority; need for defined controls and limits

Summary of Information Compiled from Records of Students with Spina Bifida Manifesta

Spina Bifida Manifesta

Congenital (existing from birth). Defect in the vertebral column characterized by the presence of a myelomeningocele (protrusion of the spinal cord and membranes covering it) both of which should normally be covered by vertebrae. Below the level of the defect, the child has diminished sensation of lower extremities, varying degrees of paralysis, and is incontinent of bowel and bladder.

Symptoms

Myelomeningocele present at birth

Sensory loss and motor loss

Bowel and bladder incontinence

Hydrocephalus (enlargement of the head caused by improper circulation and absorption of cerebrospinal fluid) may develop any time after birth.

Hospitalizations and Treatments Noted in Records

Closure of myelomeningocele shortly after birth

Shunt procedure to redirect cerebrospinal fluid into the heart, where it can circulate with the blood and reduce the possibility of hydrocephalus.

Periodic shunt revisions later in life

Periodic urological checkups.

Special Problems Noted and Recommendations Made by Doctors

Problems

Occasional tenderness at area of myelomeningocele closure

Development of decubitus ulcers on buttocks

Pressure sores from braces

Development of lower extremity deformities

Urinary tract infections

Recommendations

Therapy: ROM, PRE for uppers, ambulation training with appliances, swimming

Brace changes

Surgical procedures to allow ambulation without braces

Treatment of decubitus ulcers

Special Problems Noted and Recommendations Made by Parents

Change in behavior after shunt revisions

Embarrassment at bowel and bladder incontinence

Embarrassment at wearing orthopedic shoes (noted by teacher)

Summary of Information Compiled from Records of Students with Muscular Dystrophy

Duchenne Muscular Dystrophy

Hereditary disorder transmitted by females but affecting mostly males. Progressive generalized weakness of the volumtary muscles. Non-contagious, chronic wasting which leads to increasing infirmity, and ultimately death.

Medical Listing of Eight Stages of Functional Ability

1. Ambulates with waddling gait and marked lordosis. Elevation activities adequate (climbs stairs and curbs without assistance).
2. Ambulates with waddling gait and marked lordosis. Elevation activities deficient (needs support for curbs and stairs).
3. Ambulates with waddling gait and marked lordosis. Cannot negotiate curbs or stairs, but can achieve erect posture from standard height chair.
4. Ambulates with waddling gait and marked lordosis. Unable to rise from a standard chair.
5. Wheelchair-independence: Good posture in the chair, can perform all activities of daily living from wheelchair.
6. Wheelchair-with dependence: Can roll chair, but needs assistance in bed and wheelchair activities.
7. Wheelchair-with dependence-and back support: Can roll the chair only a short distance, needs back support for good wheelchair position.
8. Bed patient: Can do no activities of daily living without maximum assistance.

Summary of Findings from School Records

For the general understanding of teachers or aides who might be working with a student with Muscular Dystrophy, we have summarized the findings of the records of our 34 students who have Muscular Dystrophy.

Early Stages

Symptoms

Ambulates with moderate amounts of waddling and lordosis (bending backwards) with a heel-toe pattern

Ability to walk on toes but not on heels

Need to use rail or have assistance in going up stairs or climbing a curb

Complete independence in all activities of daily living

Deep tendon reflexes absent except for achilles jerk

Normal range of motion except for tight heel cords

Bilateral hypertrophy of the calf

Tendency to fall frequently

Special Problems Noted and Recommendations Made by Doctors

Encouragement to ambulate as much and as long as possible to prevent progression of deformities

Therapy - Active assistive exercises for upper extremities, exercises for trunk musculature, ROM (Range of Motion) of hips, knees, and ankles. All to prevent later deformities and to help maintain present level of function.

Lengthening of the heel cord and transplanting of tibial dorsum to allow ambulation for a longer period of time. (Can ambulate with braces or cast one week following surgery).

Middle Stages

Symptoms

Increased tendency to fall and inability to get up after falling

Final confinement to a wheelchair and dependence for activities of daily living except for feeding self and writing

Development of flexion contractures of both hips and knees and equinovares deformity of ankles

Severely limited range of motion in heel cord

Development of scoliosis (curvature of the spine)

Absence of deep tendon reflexes except for achilles jerk

Tendency to obesity

Special Problems Noted and Recommendations Made by Doctors

Continuation of therapy to maintain level of function and prevent further deformities

Sometimes braces to prevent deformities

Wheelchair when ambulation is no longer possible

Diet to control obesity

Disruptive behavior in school sometimes noted by parents and teachers

Later Stages

Symptoms

Complete dependence in all activities of daily living

Inability to feed self or write as musculature of wrists and hands decreases

Round facial appearance with involvement of muscles of mastication (chewing)

Complete absence of deep tendon reflexes

Progression of hip, knee and ankle deformities

Tendency to obesity

Special Problems Noted and Recommendations Made by Doctors

Appliance to aid in writing and feeding self

Plastic sitting corset to prevent progression of scoliosis

Electric wheelchair

Diet to control obesity

Comfort aids, particularly specially made cushions to prevent pressure sores on buttocks

Hospitalizations Noted in Records

Sometimes surgery for lengthening of heel cord (early stages)

Respiratory infections (later stages)

Medical Treatments Noted in Records

Surgical lengthening of the heel cord and transplanting of the tibial dorsum to allow ambulation for a longer period of time

Inhalation therapy

Tests Noted in Records

Muscle biopsy, enzyme studies, etc. to determine carrier

Blood tests of parents to determine if disability is result of mutation or sex-linked characteristic

Summary of Information Compiled from Records of Students with Arthrogryposis Multiplex Congenita

Arthrogryposis Multiplex Congenita

A congenital, non-progressive, condition in which the tissues at some or all the joints are stiff and fibrous, holding the limbs rigid in flexed or extended positions. The joint malformations result from immobilization of the developing embryo from any of a variety of causes which prevent normal spontaneous movements.

Symptoms

Underdeveloped due to basic disability; generalized underdevelopment of muscles and resultant muscle weakness

Absence of deep tendon reflexes

From birth - Flexion deformities of the hips, knees, wrists, toes; deformities of feet; dislocated hips

Hospitalizations and Treatments

Surgery to correct flexion deformities

Heel cord lengthenings and tissue releases

Bone fusions

Casting of hand to improve function (done when young)

Special Problems Noted and Recommendations Made by Doctors

Problems

Development of scoliosis

Frequent abdominal complaints due to ulcers or ulcerated colitis (young adults)

Little functional use of hands - need for assistance in ADL's

Recommendations

Braces - standing and ambulation with appliances if possible

Sitting corset for scoliosis (to prevent further progression)

Orthopedic devices for feeding and writing

No contra-indication for swimming

Therapy: Range of motion for all joints; active assistive exercises for uppers

Wheelchair for distance if necessary

Special Problems Noted and Recommendations Made by Parents

Assistance for ADL's

Daily therapy at home

Sitting corset difficult to handle

Pressure sores from braces

Summary of Information Compiled from Records of Students with Arthritis

Arthritis

Cause unknown. Condition manifested by swelling of joints; characterized by early onset of muscle atrophy, particularly of interosseous muscles (those between two bones)

Symptoms

Early Stages

Fatigue, muscular stiffness, loss of appetite and weight, cold hands and feet, swelling of joints, nodules on skin

Later Stages

Loss of joint motion resulting in flexion deformities and limitation in range of movement

Hospitalizations and Treatments

Physical therapy - ROM, active assistive exercises, progressive resistive exercises

Possible splinting of hands or other surgical measures

Drugs - Aspirin, steroids (group of drugs related to cortisone which may be discontinued because of undesirable side effects), gold salts, and antimalarials (may bring about remissions after several months of treatment)

Special Problems Noted and Recommendations Made by Doctors

Problems

Limitation in ADL, even restricting feeding and writing in some cases

Recommendations

Diet, posture, avoidance of colds and dampness

No contra-indication for swimming

Summary of Information Compiled from Records of Students Who are Congenital Amputees

Congenital Amputees

Children who are born with total or partial absence of a limb. (Also called reduction deformity).

Hospitalizations and Treatments

Depending on extent of deformity, prosthetic limbs are fitted

Sometimes a surgical procedure may be done to facilitate fitting of a prosthetic

As the child grows, new fittings are necessary so there is a possibility of repeated hospitalizations throughout their lives

Special Problems and Recommendations Made by Doctors

Make sure area of limb that fits into prosthesis is protected from skin breakdown

When prosthesis gets too small, rubbing can cause skin irritation

Use these prostheses

Summary of Information Compiled from Records of Students with Osteogenesis Imperfecta

Osteogenesis Imperfecta

This condition, also known as "Brittle Bones", is an inherited disorder of development in the skeleton in which the calcium content is far below normal. The bones are excessively thin and subject to multiple fractures following even mild trauma. Children are usually smaller in stature because fractures often occur in the long bones of the lower extremities.

Congenita: born with abnormalities and often many fractures

Tarde: condition often not seen until the child starts to walk. Then, fractures occur.

Summary of Findings from School Records

For the general understanding of teachers or aides who might be working with a student with Osteogenesis Imperfecta, we have summarized the findings of the records of our 14 students who have Osteogenesis Imperfecta.

Symptoms

Eyes - Blue Sclera

Teeth - translucent with pearl-like appearance

Healed fractures, primarily of lower extremities

Bowing of long bones (Shepherd's Crook)

Short structure - disproportion between trunk and extremities due to frequent fractures

Megacephaly only apparent because of trunk size as seen in proportion to extremities

Generally underdeveloped physical appearance

Infantile behavior due to protection necessitated by brittle bones - infantile behavior in young children

Hospitalizations

Fractures - some set in doctor's office; others requiring surgery

Rodding of femur and tibia to aid in the prevention of further fractures (some cases)

Medical Treatments Noted in Records

Calcitonin - Some cases

Therapy (various depending on each child)

A. Swimming
B. Ambulation training if possible
C. Exercise for ROM, muscle strength, etc.

Special Problems Noted and Recommendations Made by Doctors

Limitations set on physical education activities

Fear of doctors and examinations

Immaturity and infantile behavior

Recommendations for therapy; rodding procedures, change in appliances or wheelchairs

Special Problems Noted and Recommendations Made by Parents

Fear of doctors

Fear of falling

Fear of fractures

Discomfort while in SPICA

Fear of being handled by people other than parents

Summary of Information Compiled from Records of Students with Achondroplasia

Achondroplasia

Congenital, frequently hereditary, disorder in the conversion of cartilage to bone. Because of this, the growing ends or epiphyses of the long bones of the limbs are affected and inadequate growth results in a type of dwarfism. Short, well-proportioned body. Lordosis (curvature of the spine) often occurs, too.

Symptoms

Small size

Average achondroplastic attains a height of 50". Head is apt to be enlarged, although it appears relatively larger than it is because of small body size. Often bowing appearance to the legs.

Life expectancy is fairly normal.

Hospitalizations and Treatments

As they develop into middle life, complications might possibly develop from their lordosis (abnormal curvature of the spine).

Special Problems Noted and Recommendations Made by Doctors

Biggest problem is adapting to a world of "normal" size people and being able to function in a world made for "normal" size people. This affects schooling, socialization, and employment opportunities.

Summary of Information Compiled from Records of Students with Congenital Cardiac Conditions

Congenital Cardiac Conditions

Children born with a defect of the heart. This may involve a defect of the valves or it may involve the great vessels. Some of these can be corrected by surgical procedures.

Symptoms

In some heart conditions, children have cyanotic or bluish coloring to lips and nail beds, caused by lack of oxygen in blood stream.

Shortness of breath following a period of exertion

Generally smaller in stature

Hospitalizations and Treatments

Correction of defect

Treatment of complications of defect

Treatment of severe respiratory infection which might cause difficulty in breathing

Often hospitalized for procedure to improve condition of blood

Examinations of the heart (e.g., catheterizations) to define exact area of defect

Special Problems Noted and Recommendations Made by Doctors

More susceptible, probably, to upper respiratory infections because of the way the body is affected by poor circulation, and because of connection between heart and lungs.

Enlarged heart is common because heart has to work twice as hard to accomplish its work.

Insufficiency of oxygen to brain may cause learning problems.

Problems related to circulation.

Extremes of temperature lower body resistance to infection. Therefore, air-conditioned building is better because temperature is more even.

May need to be more careful about overdoing.

Children with congenital heart disease are usually self-limiting in what they are able to do. This separates them from those who have an acquired heart disease and must be made to slow down and rest.

Summary of Information Compiled from Records of Students with Hemophilia

Hemophilia

Hereditary disorder transmitted by females but usually affecting only males. An abnormality in blood coagulation, resulting in prolonged coagulation time and lowered prothrombin (clotting factor II) consumption.

Symptoms

Hemorrhage occurring either spontaneously or after trauma (injury)

Joint swelling

Ecchymotic areas of skin (discolored areas where blood has escaped into the tissue)

Hospitalizations and Treatments

Blood transfusions

Local hemostatis (arresting of escaping blood by means of compression or tying off blood vessels with ligature)

Administration of antihemophiliac globulin and albumin (plasma proteins)

Special Problems Noted and Recommendations Made by Doctors

Avoidance of any trauma; precautions as far as activities are concerned

Swimming only after consultation with physician and swimming instructor

Physical therapy (ROM) in some cases, but prohibited in others because of resulting hemoarthrosis

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Extensive references related to each strand have been printed with each module.